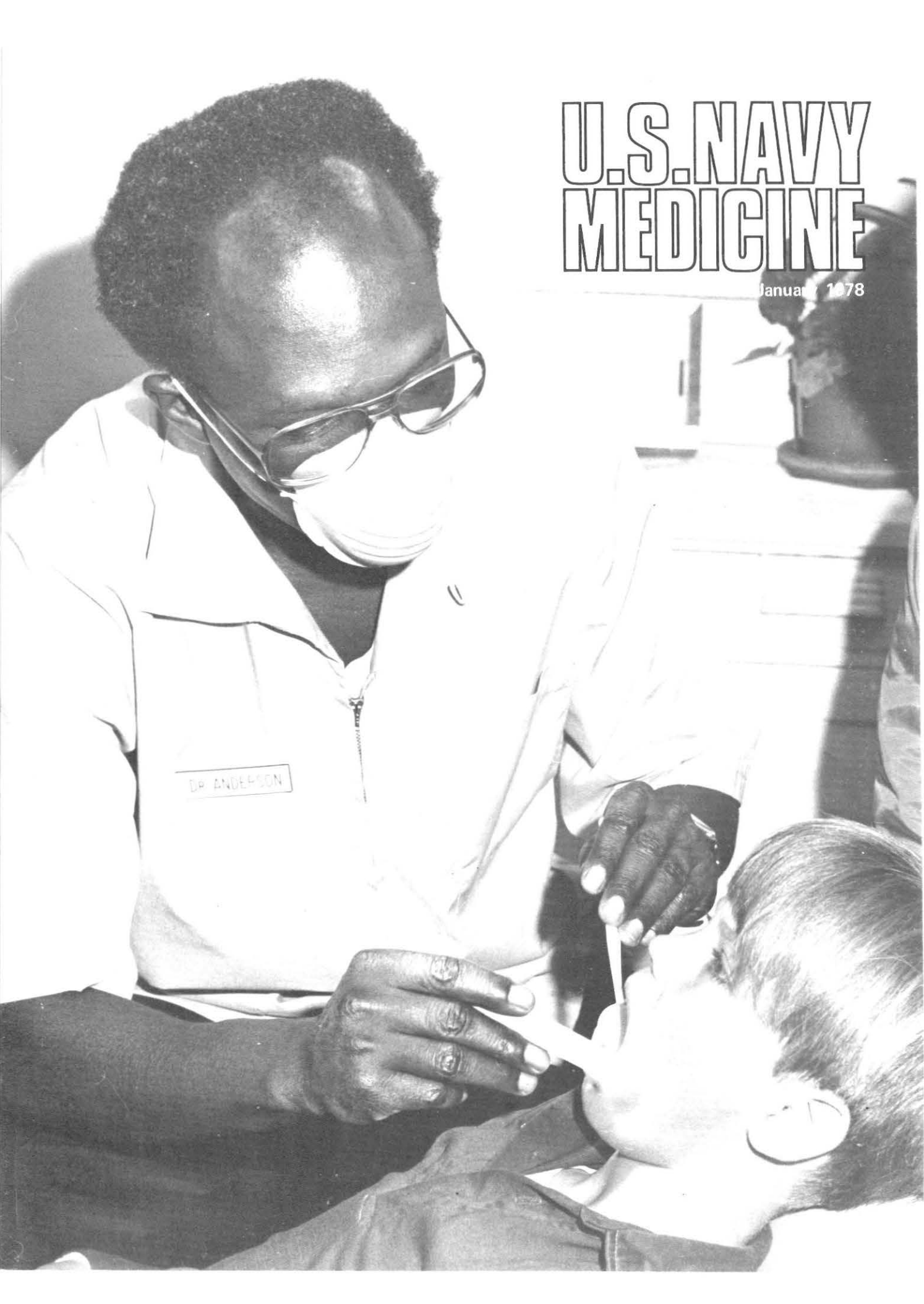
U.S.NAVY
MEDICINE
January 1978
DR ANDERSON

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U.S. NAVY MEDICINE

Volume 69, Number 1
January 1978

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COVER: Navy dental activities are getting ready for National Children's Dental Health Week, set for 5-11 February. In a scene from last year's observance, CAPT John W.R. Anderson (DC), preventive dentistry officer at Naval Regional Dental Center, San Francisco, examines a student from Treasure Island School.

Setting the No Smoking Example

WE IN THE medical profession are challenged today with a most perplexing health problem. The strides of past generations in curtailing infectious disease and encouraging adequate nutrition and habitation have been securely reinforced into the fabric of our American public philosophy. Two major areas remain, however, in our profession's fight against unnecessary disease and premature death. These areas are environmental pollution and self-destructive behavior.

Self-destructive behavior takes many forms, including alcoholism, drug abuse, tobacco smoking, obesity, reckless driving, and suicide. One of the principal forms of self-destructive behavior among the patients we care for is cigarette smoking.

Today there can be no reasonable doubt that cigarette smoking is harmful and that the harm is done both to the smoker and to those exposed to the smoke. In fact, the World Health Organization has suggested that control of cigarette smoking alone could do more to improve health and prolong life in developed countries than any other single action in the field of preventive medicine.

As health care professionals, we must encourage programs which will decrease morbidity and early death—and that includes programs to decrease tobacco smoking. Our successful alcohol rehabilitation programs have highlighted several techniques that should prove equally applicable and successful in encouraging people to alter their smoking habits. Some of these techniques are:

CDR H.C. McKinney, CO of USS Seahorse **(SSN-669), explains operation of periscope to VADM Arentzen**

- A meaningful physician-patient relationship. Just **telling** a patient—whether once or repeatedly—to stop smoking usually doesn't work. It takes time, involvement, and follow-up to help people alter their patterns of living.
- Peer group experiences. Alcoholics Anonymous is the cornerstone of our alcohol rehabilitation program, and "stop smoking" groups show similar promise of success.
- Identification with the healer. Physicians and other health professionals should set an example by not smoking. Navy health care personnel who smoke in front of their patients are derelict in their ethical duties to those patients. I strongly advise all Medical Department members who smoke to break the habit if they can, seek help if they cannot, but certainly to refrain from the purchase or use of cigarettes when around patients.

Hospitals and clinics are health care delivery areas. It is ironic that cigarette smoking has traditionally been banned only around oxygen equipment. Since tobacco smoke itself is hazardous, it should not be tolerated where patients—particularly patients with pulmonary disease—are assembled. A no smoking policy should apply to passageways, waiting areas, physicians' offices, and any other spaces which are ventilated into patient care areas.

The fight against infectious diseases is by no means over, but the principles of control have been generally accepted. That fight may seem easy when compared to the difficulties of combating self-destructive behavior. But we cannot avoid the battle. As health care providers, we must not only recognize tobacco smoking as harmful, but must also behave in a manner consistent with our knowledge that smoking is a health hazard.

W.P. ARENTZEN
Vice Admiral, Medical Corps
United States Navy

Department Rounds

Dental Corps

Operation Brush-In

Last February the children of Navy families assigned to Parris Island, S.C., began displaying unusual behavior: soon after lunch or after eating a snack, they would head for the restroom to brush their teeth. They also started bringing home posters they had made to tout the benefits of good oral health. And many of the youngsters took to checking up on their parents' dental care habits.

The parents quickly got the word: It was National Children's Dental Health Week, and their children were in the thick of the Parris Island Naval Regional Dental Center's Operation Brush-In.

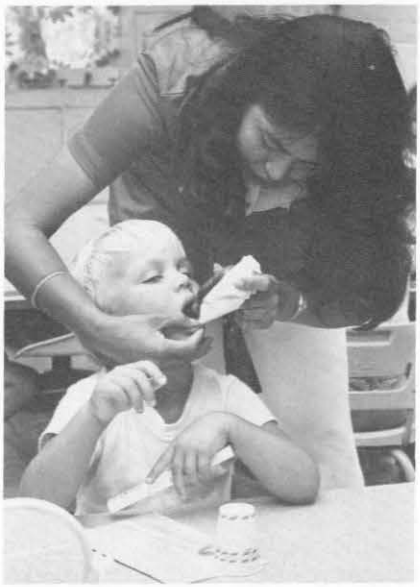
This year again during National Children's Dental Health Week (5-11 February) Navy dental activities worldwide will sponsor dental education and treatment programs for children of Navy and Marine Corps members. So as not to interfere with the dental team's primary mission of serving active-duty personnel, these programs are usually conducted during off-duty time.

Navy dental officers and dental technicians all stress that teeth are made to last a lifetime. Daily use of fluoride toothpaste is essential for keeping teeth and gums healthy, they tell the youngsters. So is cutting down on between-meal sweets like candy bars and soda pop.

National Children's Dental Health Week is sponsored each February by the American Dental Association. For the third consecutive year the theme of the week is "Smile, America." The goal: to awaken children and their parents to the importance of maintaining good oral health.

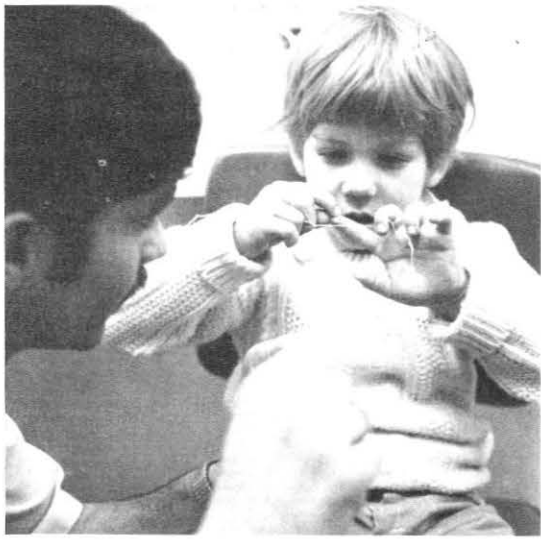
During National Children's Dental Health Week last year, Navy dental activities carried out many successful projects. Here are highlights of some of the best:

- At Naval Regional Dental Center, Camp Pendleton, Calif., more than 50 members of the dental health care team volunteered to give eligible children preventive treatments and to participate in dental health education programs in the base school. Posters the school children made as part of the program were displayed around the base during February.
- Sea World's Wonder Woman visited Naval Regional Dental Center, Orlando, Fla., giving their program a touch of show business glamour. Everyone pitched in for the week: members of the local Navy Wives Club joined some 140 military and civilian dental workers to help launch a program of preventive dental treatment. Beneficiaries of this assistance included Seminole County Migrant Health Project participants.
- Staff members of Naval Regional Dental Center, Norfolk, Va., worked with members of the local #206 Dental Reserve Unit to provide programs for dependents of shore-based and fleet-based personnel. Special National Children's Dental Health Week messages were printed on shopping bags and milk cartons used on the military base.
- A "Happy Tooth" puppet show for primary school children and audiovisual aids for the upper grades helped the staff of U.S. Naval Regional Dental Center, Subic Bay spread the dental health message in the Philippine Islands. Through the local THETA (teenage health education teaching assistants) Program, specially trained high-school students discussed good dental care with small groups of youngsters. More than 1,000 students toured the Cubi Branch Dental Clinic, where they received a dental screening examination, oral hygiene instruction, and a topical fluoride application. A mass media campaign also gave support: the local newspaper carried a series of preventive dentistry feature articles, radio and television stations carried spot announcements, and a five-minute television interview with a dental officer was aired several times. Also, the Navy Exchanges designed special window displays for National Children's Dental Health Week.

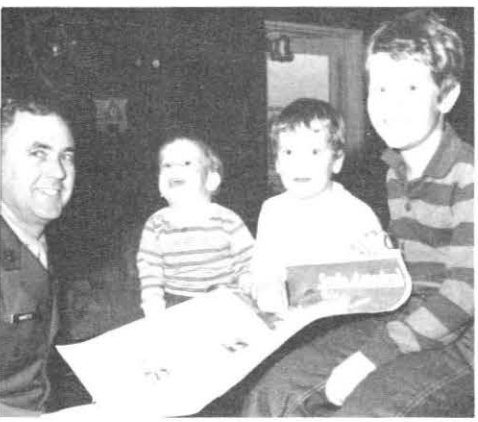


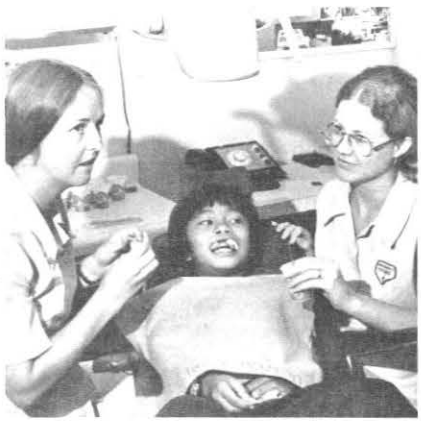
Child gets fluoride treatment in Guam

Annapolis kids practice brushing

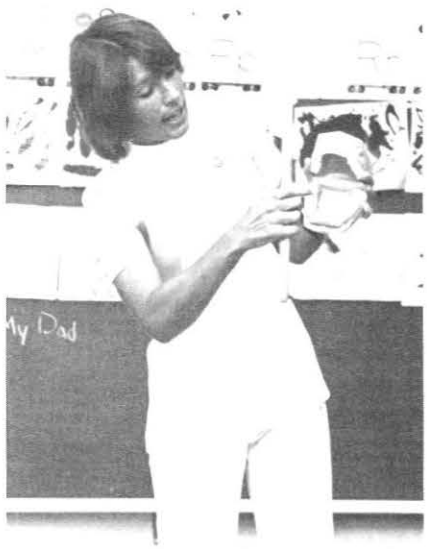


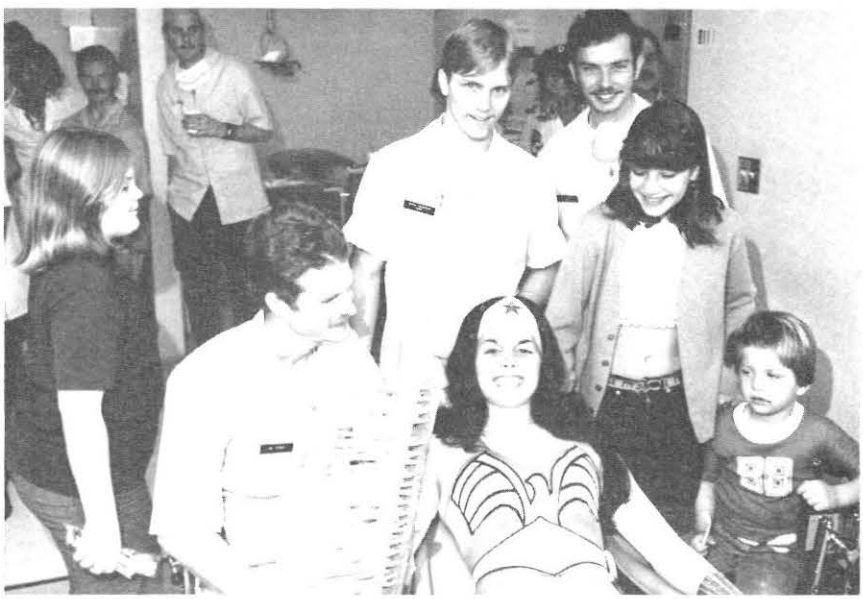
Youngsters at Norfolk receive check-ups and learn how to use dental floss as part of a preventive dentistry program



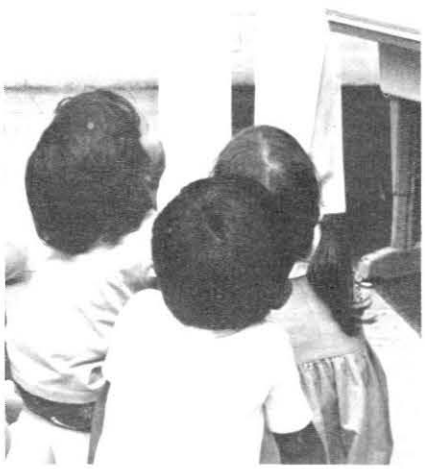


"Smile America" is theme at Parris Island and . . . Cubi Point





Wonder Woman from Sea World visits Naval Regional Dental Center Orlando



Instructor teaches oral hygiene

The Bitten Bite Back

They were here when Jean Ribault landed in 1562. They have survived the island's humid climate for more than 400 years and when the first Marines arrived at Parris Island, the "Flying Teeth" were there to greet them. Today they still swarm to new arrivals at the Marine Corps Recruit Depot, Parris Island, S.C.

Sandflies or "culicoides," pests near and dear to the hearts of all Parris Island personnel, fly under many names: biting midges, biting gnats, sand fleas, no-see-ums. It all depends upon what part of the country you happen to be visiting.

The U.S. Navy and U.S. Department of Agriculture have combined forces to conduct an intensive research project focused on these pests.

The Preventive Medicine Service at the Parris Island hospital annex takes the initial steps in the research project by collecting samples. The USDA Research Laboratory in Gainesville, Fla., then uses these samples for further studies and classification.

The project began when LT James R. McCormick (MSC), depot preventive medicine officer and environmental health officer, collected data on patients with cellulitis from July 1975 through March 1976.

"The insect (sandfly) bite was directly responsible for the majority of all cellulitis infection of exposed skin areas," LT McCormick reported. "These insect bites are not only painful, but also itch a long time after the bite. Usually, prolonged scratching follows, which inadvertently opens the skin; invading bacteria then introduce subsurface inflammations known as acute cellulitis infection."

LT McCormick played a major role in initiating the research project and is responsible for planning and coordinating all local activities. He first contacted the Disease Vector Ecology and Control Center in Jacksonville to ask for help combating the sandfly problem. The research laboratory in Gainesville was then contacted. The result: a research project funded by the Naval Facilities Engineering Command, Atlantic in Norfolk through the Department of Defense Armed Forces Pest Control Board.

Over the next 10 months, logistical planning established the long-term, joint USN/USDA sandfly research project.

Disease carriers. The research project became a reality in January 1977 when USN/USDA program representatives briefed key managers at the recruit depot and Naval Hospital Beaufort, S.C., on the project's objectives.

For ecological diversity there are three testing areas: the major one at Parris Island, another at Fort Myers, Fla., and a third at Yankeetown, Fla.

In the past no sustained research had been done on sandflies because they were not known to be disease

Dr. Kline (L) and HMC Wilson remove sandfly container from emergency trap

LT McCormick (L) and HMC Wilson check light trap for captured sandflies

HMC Wilson collects mud samples and specimens to identify sandflies

carriers in the U.S. However, sandflies have been directly associated with numerous diseases of men and animals in the Caribbean and elsewhere, and there is potential for this type of problem here.

In phase I of the project—biological study of the sandfly—most of the on-site research is done by HMC Leonard Wilson, a preventive medicine technician and vector control specialist. Chief Wilson was assigned to the USDA Gainesville office last April for recertification as a vector control specialist. While there, he studied advanced techniques for collecting and identifying insects. His special interest: sandflies.

Once a month, Dan L. Kline, Ph.D., a research scientist with the Gainesville laboratory, visits the Parris Island recruit depot to observe the project's progress, coordinate activities with the preventive medicine officer, and obtain samples for further studies.

Life cycle. Sandflies are so small that 12 to 16 of them, placed end to end, might equal one inch. There are three major species on Parris Island: Culicoides *hollensis*, Culicoides *furens*, and Culicoides *melleus*.

The life cycle of culicoides consists of four stages: egg, larvae, pupae, and adult. Eggs are tiny and difficult to find. They are laid on the mud or sand near pieces of debris or in small depressions.

In the larval stage sandflies resemble worms but are still barely large enough to be seen. During their larval and pupal stages, sandflies are found either in the mud of salt marshes or in intertidal sand.

The body of adult sandflies consists of three regions: head, thorax, and abdomen. On the head are a pair of compound eyes, antennae, and mouthparts. The antennae of the male appear to be hairy. Female mouthparts are adapted for blood-sucking, while males feed on plant juices. Sandfly wings may be plain or marked with a pattern of light spots against a darker background. Wing pattern is an extremely important identification characteristic.

Chief Wilson is responsible for the initial steps of the biological studies carried out in a temporary field laboratory. Collection traps, some of which are modified mosquito traps, are placed in various locations around the depot. As the sandfly completes its life cycle and becomes an adult, it emerges from the salt marsh mud. The cone-shaped trap often covers a breeding site, and as the sandflies rise from the mud to the surface, they travel through the cone to reach the light above, where they are captured. These traps enable researchers to identify sandfly breeding sites.

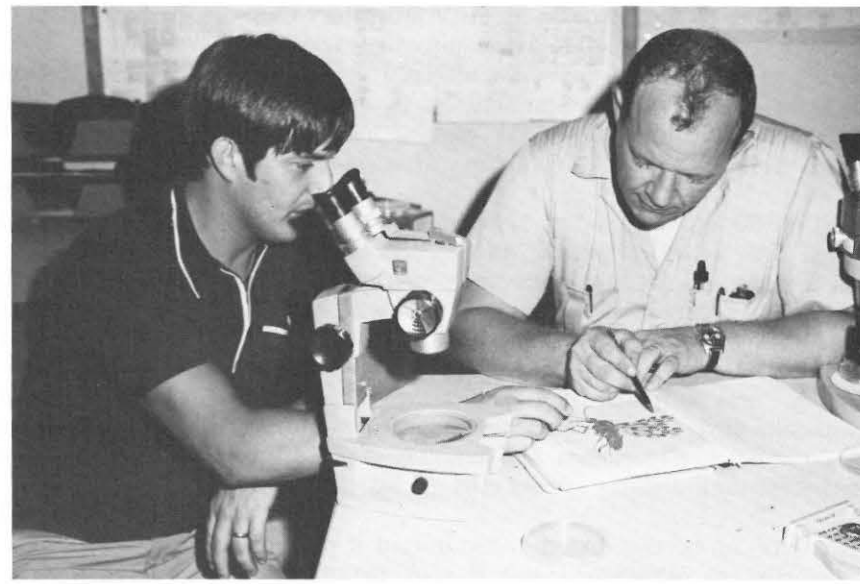
Studies of sandfly biology will permit researchers to predict more accurately regional infestation peaks; preventive medicine specialists will then be able to develop a thorough pest management system and make better use of current vector control techniques.

In the future, researchers will be seeking more effective measures of control by refining existing insecticides and developing new ones—particularly insecticides containing chemicals already approved for use to protect man and his environment.

Future research will involve laboratory and field studies with larvicides for long-range control, and adulticide evaluations with aerial and ground equipment to develop immediate remedial control measures. Researchers will also investigate various biological controls, growth regulators, toxicants, parasites, predators, and pathogens in disease transfers known to be associated with sandflies.

The researchers also hope to develop repellents that can assure protection for extended periods. But the ultimate goal is to bring the sandfly population at Parris Island down to a safe, tolerable level.

—Story and photos by LCPL Cheryl A. Cooke.



Dr. Kline (L) confers with HMC Wilson on culicoides identification

Attack peaks. Seasonal and daily attack times vary with the different sandfly species. Culicoides *hollensis* has two peaks of abundance: one in the spring and another in the fall. Most of their activity occurs during the day. Culicoides *furens* is present from late April to early October. There are several peaks of abundance, the largest occurring in late May, August, and September. *Furens* are active at night, with biting peaks at sunrise and sunset. Culicoides *melleus* appears in early April and remains on the scene until the end of September. Like *furens*, *melleus* is active at night.

Policy

Safety Tips

Safe Use of Inhalation Anesthetics in Ambulatory Care Facilities

CDR John P. Swope, MC, USN
BUMED, Code 416

National Fire Prevention Association (NFPA) standard 56G, "Inhalational Anesthetics in Ambulatory Care Facilities," was developed to guide outpatient facilities where general anesthesia is administered or relative analgesia produced. This standard is, in essence, a companion document to NFPA 56A, "Inhalational Anesthetics," described in *U.S. Navy Medicine* in July 1977.

NFPA 56G provides safety requirements to protect against fire, electrical shock, and mechanical injury from compressed gases or compressed gas cylinders in a surgical setting. Protection is also provided against anoxia from erroneous gas connections without unduly limiting the activity of the practitioner, whether surgeon, oral surgeon, dental anesthesiologist, or anesthesiologist. Safety requirements for the manufacture, storage, transportation, and handling of gas cylinders before their delivery are not covered by this standard.

Hazards can be eliminated or minimized if physical safeguards are established and if staff members of ambulatory care facilities pay meticulous attention to maintaining safe practices. Studies of hazards associated with hospital operating rooms over a period of 30 years saw that the greatest safety is secured only through a completely coordinated program, not by instituting individual or unrelated safeguards. Therefore, all personnel dealing with anesthetic agents are required to work together in this precautionary program. All such personnel should have thorough, current knowledge of the hazards posed by electrical shock, use of compressed gases, and fire in an oxygen-enriched atmosphere. In addition, it is essential that they update their knowledge regularly through continuing education.

NFPA 56G is divided into four parts:

1) Introductory material, including definitions of terms used throughout the standard and in the enforcement of requirements established by the standard.

2) Discussion of hazards of fire, electrical shock, and use of compressed gas.

3) Standards for installing and testing medical gas systems.

4) Requirements for administration and maintenance of ambulatory care facilities.

There are also four appendices which give additional information and explain the rationale behind the standard's requirements. A complete text of NFPA 56F, "Nonflammable Medical Gas Systems," is an additional appendix.

NFPA 56G cites NFPA 70, "National Electrical Code," and its applicable requirements. Other standards referenced are NFPA 56A, "Inhalational Anesthetics"; NFPA 56B, "Respiratory Therapy"; and NFPA 56F, "Nonflammable Medical Gas Systems." All these standards have been reviewed in previous issues of *U.S. Navy Medicine*.

NATURE OF HAZARDS

Combustion. In NFPA 56G, the discourse on the nature of hazards emphasizes that oxygen and nitrous oxide, normally used for relative analgesia and as components of general anesthesia, are strong oxidizing gases; individually or in combination, they readily support combustion. Where oxygen and nitrous oxide are used, materials flammable and combustible in air ignite more easily and burn more vigorously. Thus, many materials commonly found around patients—hair oils, oil-based lubricants, skin lotions, clothing, linen, paper, rubber, alcohols, and plastics, for example—may become major fuels.

The three requirements for fire or combustion are fuel, supporting material (such as oxygen or nitrous oxide), and a source of ignition, such as an open flame, burning tobacco, heating coils, defective electrical equipment, or adiabatic heating of gases. (This latter effect occurs when sudden compression or recompression of a gas to high pressure generates increases in temperature up to 2,000° F.; such temperature ex-

tremes can easily ignite organic materials.)

Toxicology. NFPA 56G contains a cautioning note for toxicologic hazards: when modern, nonflammable inhalational anesthetic agents are used with high-flow techniques, and when there is inadequate ventilation of excess gases, the atmosphere may produce low-grade toxicity in people who regularly work in the facility.

Further, if plastic materials catch fire, highly toxic products of combustion may cause sudden unconsciousness, cardiovascular collapse, and severe injury or death, even in people relatively remote from the fire. These products of combustion have caused injury after passing through halls, ventilation systems, and even an electrical conduit.

Mechanical injury. Since gas cylinders contain a large amount of energy, they should be handled carefully. If the valve of the cylinder should break off, the cylinder's contents may be discharged with sufficient force to cause the cylinder to spin wildly or move uncontrollably through the force of jet propulsion.

NFPA 56G describes in detail hazards of transferring the contents of one compressed gas cylinder into another. Recompression of gas without dissipation of heat generated by the adiabatic process can cause combustible materials to ignite.

ELECTRICAL HAZARDS

The main electrical hazard of concern to personnel working with inhalation anesthetics is electric shock resulting from a failure in normally safe electrical systems or appliances. The problem may result from defective wiring, faulty components, deteriorated insulation, or mechanical abuse. Electric shock in turn may cause undesired muscle contraction, with injury to the person administering the anesthetic, the patient, or in surgical procedures, the operating physician. The problem is further complicated because patients under anesthetic do not feel pain and therefore lose their normal protective reflex response to electric shock. Electric shock may also cause cardiac disturbance, leading to ventricular fibrillation and death.

The electrical energy supplied by a defective system may cause serious burns. Also, sparking and arcing caused by a defective electrical system may serve as an ignition source for combustion.

NFPA 56G also addresses the problem of electrical fibrillation of the heart in patients whose cardiac pacemakers have external conductors. If stray electrical currents in the range of millionths of an ampere (microamperes) contact one of these conductors, ventricular fibrillation may occur. However, patients with external pacemakers normally are not treated in ambulatory care facilities.

EQUIPMENT

Central gas supply systems, when used, shall be installed and tested according to NFPA 56F, the standard for nonflammable medical gas systems. If portable systems are used and are the sole supply of nitrous oxide and oxygen, NFPA 56F recommends that two cylinders of each gas be attached to the administrating device to provide a reserve supply. Electrical circuits shall be equipped with grounding contacts.

Anesthetic apparatus shall be subject to approval by the authority having jurisdiction.* Between the apparatus and the flush-type cylinder valves commonly used with anesthetic gas cylinders there shall be a yoke-type connection, #860, as described in ANSI [American National Standards Institute] B57.1 of 1965, "Compressed Gas Cylinder Valve Outlet and Inlet Connections." If adjustments or repairs involving the use of tools are done on the equipment, the gas anesthesia apparatus shall be tested before it is used again on patients. Also, the final common path machine outlet to the patient shall be tested to determine that only oxygen is delivered from the oxygen flow meters and oxygen flush valve. Interventions requiring such testing shall include but not be limited to alteration of pipelines, hoses or fittings; alteration of internal piping; adjustment of selector switches or flush valves; and replacement or repair of flow meters or bobbins.

MAINTENANCE OF EQUIPMENT

The administration and maintenance section of NFPA 56G is an adjunct to physical precautions specified in the section on equipment; again, the hazards involved in the use of anesthetic agents can only be minimized when recognized by all personnel. Responsibility for physical protection rests with everyone involved in the functioning of anesthetizing locations.

Special precautions include the safe handling of oxygen cylinders, proper functioning of manifolds, and proper maintenance of cylinder storage facilities. The physical safeguards built into the anesthetizing location or storage area will not provide protection unless safe work practices are followed and good maintenance is provided. Scheduled inspections should be carried out and defective electrical equipment properly replaced or repaired. Rules and regulations for the functioning of ambulatory care facilities should be posted. Appendix C of this standard gives a suggested text to be posted.

As the trends toward outpatient surgery and toward frequent use of anesthesia as an adjunct to dental practice grow, NFPA 56G will become increasingly important. This pamphlet should be held by all Navy health care facilities.

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*The phrase "authority having jurisdiction" is commonly used in NFPA documents. The NFPA itself does not make all decisions regarding enforcement of NFPA standards; such decisions are made by the office or agency that implements the standard, whether it be the fire inspector, the Joint Commission on the Accreditation of Hospitals, or the hospital administrator.

Instructions and Directives

Equal Opportunity Program

Phase I of the Navy Equal Opportunity Program provided a minimum of 18 hours of race relations education to increase awareness of prejudice and discrimination within the Navy.

Implementation of Phase II is now required for all BUMED-managed activities. BUMED schedules Phase II implementation on a regional basis and provides activities with help from two BUMED equal opportunity program specialist teams. Before Phase II is implemented, demographic data must be collected on the rank/rate, sex, race, ethnic group and individual work unit of command personnel. Also, all commanding officers and officers-in-charge are required to submit an affirmative action plan to BUMED (Code 008) for approval.

The following elements are considered minimum requirements of Phase II implementation:

- Counter Racism/Equal Opportunity Workshop (for selected command personnel)
- Women in the Navy Workshop (for E-6 and above)
- Action to Counter Racism Workshop (E-6 and above)
- Military Rights and Responsibilities Workshop (E-5 and below)
- Cultural Expression in the Navy Workshop (all hands)
- Affirmative Action Plan Workshop (selected command personnel)
- Command Training Team (selected E-7 through E-9 and 0-3 and above)
- Command Data Bank
- Human Relations Council

Quarterly, all commands except those completing Phase II will report the status of Phase II to BUMED (Code 008).—BUMED Instruction 1500.12B of 11 July 1977.

Anthropometric Compatibility Assignment Program

A system of anthropometric measurements and coding has been developed to identify aircrew personnel whose size is compatible with today's cockpits. BUMED Code 51 is responsible for implementing and managing this program, and for coordinating with Chief of Naval Operations, Commandant of the Marine Corps, Bureau of Naval Personnel, and Naval Air Systems Command.

The commanding officer of the Naval Aerospace Medical Institute shall ensure that the following measurements are obtained for all aviation candidates during their initial physical examination: sitting height, functional reach, buttock-knee length, and buttock-leg length. These measurements shall be converted to a four-digit code and recorded on the Anthropometric Data Record (BUMED 6410/9). A copy of this record will be sent to the Naval Aerospace Medical Research Laboratory.

The commanding officer of Naval Aerospace Medical Research Laboratory shall ensure that this data is incorporated into the Human Factors Data Bank, and shall provide a weekly report for the naval aviation schools command. Biweekly reports of Marine Corps members will be sent to the Marine Aviation Training Support Group.

Fleet aviation personnel with potential cockpit anthropometric incompatibilities shall be referred to the nearest aviation physiology training unit to be measured. If such measurement reveals an incompatibility, this information shall be recorded in the member's health record, using NAVMED 6410/9, and provided to the commanding officer and other involved personnel as required. If cockpit reassignment is sought, official command correspondence shall be sent to the Chief of Naval Personnel or the Commandant of the Marine Corps, via Chief, BUMED and the appropriate chain of command.

All anthropometric measurements recorded before 1 Jan 1977 are invalid for the purpose of this instruction. —BUMED Instruction 3710.1 of 11 July 1977.

Measles (rubeola) immunization

Use of live attenuated measles virus vaccine, introduced in the U.S. in 1963, has reduced the number of affected patients to approximately 35,000 a year. There has also been a reduction in the incidence of post-measles encephalitis, and in other major complications of the disease.

However, large local outbreaks of rubeola continue to occur, and recent surveys indicate that some 35% of American children between 1 and 4 years of age have never been immunized against the disease.

Live attenuated measles virus vaccine is available to Navy medical treatment facilities and should be offered beneficiaries in accordance with American Academy of Pediatrics recommendations. Generally, measles immunization should be delayed until the child is 15 months old, but during a measles outbreak the vaccine may be given any time at or after 6 months, and should be followed by a second inoculation when the child is 15 months old. Nonimmunized infants who will be traveling outside CONUS may be immunized after the age of 6 months, with reimmunization after they are 15 months old. Also, all children who have been immunized with live attenuated measles vaccine before the age of 12 months should be reimmunized at or after the age of 15 months.

Adults ordinarily need not be immunized against measles since most have prior immunity. However, vaccination of adults may be considered for isolated groups of people who have no prior immunity.

Because live virus measles vaccine may temporarily depress tuberculin skin sensitivity, tuberculin testing should be scheduled before the vaccine is administered. During measles outbreaks, requirements for prior tuberculin testing may be waived. Children already under treatment for tuberculosis may be immunized with live virus measles vaccine; however, the effect of the vaccine on children with untreated tuberculosis is unknown.

Large outbreaks of rubeola among Navy health care beneficiaries should be reported.

[**Note**: CAPT D.F. Hoeffler (MC), director of the Occupational and Preventive Medicine Division at BUMED, reports that Navy children may be somewhat better off than the general public. In a survey of families seen at one naval regional medical center, 78% of children age 5 years and younger had been immunized against measles. However, Dr. Hoeffler points out that the survey did not address 6-14-year-old boys and girls who are especially important immunization targets. Measles is now being seen in sporadic epidemics among older children and adolescents, Dr. Hoeffler says.

A reminder: The goal of the National Immunization Initiative called for by President Carter is complete immunization of all children age 14 and under. Ed.]—BUMED Instruction 6230.12B of 18 July 1977.

Radiation workers

Individuals working for or being considered for Navy work as occupational radiation workers and who are medically qualified in all respects except for a history of therapeutic irradiation for a benign condition, may be employed in work involving possible exposure to ionizing radiation pending review of their medical history by BUMED. However, people who have been treated with therapeutic irradiation for other than a benign condition shall not be employed as occupational radiation workers until their medical history has been reviewed by BUMED and approval obtained for their employment.

[**Note**: The Radiation Effects Advisory Board will also request reports of slit lamp examination and thyroid scan in patients who have a history of therapeutic irradiation to the head or neck. Ed.]—BUMED Notice 6470 of 19 July 1977.

Weight standards

Since change 91 to the *Manual of the Medical Department* was issued, there has been some confusion about weight tables. The tables in MANMED arts. 15-17 and 15-27 (change 91) apply to applicants for enlistment, appointment, or commission in the Navy and Marine Corps. BUPERS Instruction 6110.2B with change 1 and MANMED art. 15-51 provide weight control maintenance guidelines for active-duty Navy and Marine Corps members.—BUMED Notice 6110 of 25 July 1977.

Preventive medicine annual report

The semiannual report of preventive medicine activities (MED 6200-1) has been changed to an annual report.—BUMED Instruction 6200.9D, change transmittal 1, of 28 July 1977.

Medical Reserve Policy Advisory Board

A Medical Reserve Policy Advisory Board has been established to represent inactive Reserve components of the Medical Department and to advise the Surgeon General on inactive Naval Reserve programs.

Board chairman is the Reserve Medical Inspector General. Members are all inactive Reserve Medical Corps flag officers, representatives of the 16 Naval Reserve readiness command staff medical officers, the Fourth Marine Division surgeon, Fourth Marine Air Wing medical officer, Reserve Construction Forces Brigade medical officer, Reserve liaison directors for the Medical Service Corps and nursing services, master chief petty officer liaison for the medical program, and the director of the Naval Reserve Division, BUMED.

The Board will meet at least once a year.—BUMED Instruction 6000.7 of 1 Aug 1977.

Standard food service disinfectant

The standard military disinfectant commonly used in Navy food services is temporarily unavailable. A substitute commercial disinfectant is now available under stock number NSN 6840-01-035-5432.

The substitute product will be used until the standard disinfectant is again in stock. However, since the substitute product is not designed for military use, special directions must be followed to ensure it is acceptable for use in the field.

To disinfect mess gear, the disinfectant should be dissolved in 25 gallons of rinse water. The substitute disinfectant cannot be used in water colder than 50° F.

Fresh fruits and vegetables should be left whole and unpeeled, and washed in a solution made by dissolving a package of disinfectant in 20 gallons of 100° F. water. After they are washed, fruits and vegetables should be immersed for 30 minutes in a similar but freshly prepared solution. Disinfectant solutions should not be reused; a fresh solution should be prepared for each use. After 30 minutes, fruits and vegetables should be removed from the solution and rinsed thoroughly in potable water.—BUMED Notice 6240 of 4 Aug 1977.

Military veterinary medical support

Military veterinary medical support for Navy and Marine Corps activities is authorized on a nonreimbursable basis. Veterinary personnel are trained in food establishment sanitation and may be used to inspect commissary stores. Inspection and reporting procedures will be coordinated between the environmental health officer and the senior veterinary support person at the inspection site.

Veterinary personnel should be used primarily to perform sanitary inspections of food processing establishments and facilities; inspect food supplies to determine conformance with contractual requirements; determine that perishable items are properly stored, handled, and transported; investigate animal diseases, particularly diseases transmissible between animals and man; and provide veterinary medical and surgical services for Government-owned animals.

Activities requiring veterinary support shall submit a request to CHBUMED (Code 55) via the Navy Food Service Systems Office or the Commandant of the Marine Corps. Requests for veterinary research personnel shall be sent to CHBUMED (Code 55) via the Naval Medical Research and Development Command.

An Interservice Support Agreement (DD Form 1144) shall be executed between the activity requesting support and the Army or Air Force activity providing veterinary personnel.—BUMED Instruction 6401.1B of 8 Aug 1977.

Revision of dental classification

Change 91 to the *Manual of the Medical Department* (article 6-101) contained significant modifications to dental classification criteria and to the color coding system used for dental folders. Dental commands, services, and departments should introduce these new criteria during FY78.

The revised criteria, together with the newly introduced requirement for all active-duty personnel to undergo annual oral examinations, will undoubtedly cause a change in the number of people in various classification categories. Dental officers should ensure that local Line commanding officers understand that category increases may be due to modified examination methods and revised classification criteria.—BUMED Note 6620 of 16 Aug 1977.

Hospital Corps A School

Minor changes have been made in eligibility requirements for admission to Class A Basic Hospital Corps School. Candidates must now earn a combined Word Knowledge (WK) and Arithmetic Reasoning (AR) score of 105 on the Armed Services Vocational Aptitude Battery. Formerly, this test was called the Basic Test Battery, and requirements were for a combined general classification test (GCT) and arithmetic (ARI) score of 105.

Also, candidates with a history of drug abuse will be carefully screened to ensure they are good risks for Hospital Corps School.—BUMED Instruction 1510.11F of 17 Aug 1977.

New food service inspection form

Beginning December 1977, a new four-part form, NAVMED 6240/1, Food Service Sanitation Inspection, will be available in the supply system under stock number 0105-LF-206-2400. The new form is to be used for inspection of Navy food service facilities ashore and afloat, and will improve the inspection program by standardizing inspection and reporting procedures.

Along with the new form, a point scoring system is being introduced establishing minimum scores for passing sanitation inspections and correcting defects.—BUMED Notice 6240 of 6 Sept 1977.

Armed forces regional health services system

Effective 1 Oct 1977, the 13 medical regions of the Armed Forces Regional Health Services System have been realigned into nine regions. Navy medical facilities should establish local liaison with Army and Air Force counterparts within their region.—BUMED Notice 5450 of 15 Sept 1977.

Dental inspections

This notice sets forth a tentative schedule through September 1978 for command inspections by the Inspector General, Dental. Activities will be contacted approximately two months in advance of a planned inspection concerning more specific dates.—BUMED Notice 5040 of 13 Oct 1977.

Aeromedical Safety Officer Program

A number of flight surgeon, aviation physiologist, and aviation experimental psychologist billets have been identified and assigned to the Aeromedical Safety Officer (AMSO) Program to assure continued direct aeromedical safety support to Navy and Marine Corps aviation establishments.

Aeromedical safety officers will provide specialized consultation, advice, and recommendations in aeromedical aspects of safety, training, and operation of Navy and Marine Corps aviation. Specific duties will include: participation in local aviation safety programs; monitoring of local aviation life support systems; participation on relevant boards and committees, and in readiness evaluation of aviation units; evaluation of aeromedical aspects of local search and rescue plans; liaison with environmental health and preventive medicine services, as well as with the local naval regional medical centers; and coordination of epidemiological approaches to accident trends and causes.—BUMED Instruction 5100.11 of 14 Oct 1977.

BUMED SITREP

ASBESTOS SAFETY . . . The Navy is conducting studies at Pearl Harbor and Long Beach Naval Shipyards to determine the extent and effect of possible asbestos exposure on shipyard workers. Plans are being made to extend these studies to other naval shipyards.

An intensive audit of all Navy shipyards also is being conducted to ensure that safety procedures previously established for handling asbestos materials are being followed. During ship repair and overhaul, rigid protective measures are prescribed to prevent workers' exposure to asbestos. In addition, the Navy prohibits ripping out asbestos at sea, except in emergencies. Rip-out in port is conducted under the same restrictions applicable to shipyard civilian personnel. Workers in occupations with a high risk of exposure to asbestos fibers are examined when first hired and annually thereafter. Also, these workers receive a complete medical examination upon termination of employment.

In a related development, the Chief of Naval Operations established an asbestos policy task group on 16 Aug 1977 to develop a comprehensive Navy policy on asbestos, including medical surveillance, environmental monitoring, and establishing Navy responsibility and obligation to former employees. Current Navy directives will be revised as necessary to reflect expanded responsibilities. Even under the present guidelines, the occupational medicine community will be significantly tasked, since increasing numbers of asbestos workers and other shipyard production workers now require physical examinations.

HEARING CONSERVATION . . . BUMED expects to revise its Hearing Conservation Program instruction to conform to an anticipated Department of Defense instruction. From preliminary indications, DOD hearing conservation efforts appear to be moving toward a requirement that hearing protection be worn by all personnel routinely exposed to noise greater than 85 dBA, without regard to duration of exposure. The revamped program will also include requirements for audiometry to detect early onset of hearing loss and a detailed disposition scheme for individuals so detected. While engineering control of noise remains the preferred method, appropriate combinations of hearing protection and engineering control will be allowable in situations where noise levels are not routinely greater than 100 dBA. The revised program will also include preselection criteria to ensure that personnel with preexisting hearing losses cannot be assigned to noise hazardous areas or in noise hazardous job classifications.

BUMED continues to improve audiometric support, with initiatives in baseline audiometry for recruits, mobile audiometric vans to support afloat units at pierside, and improved training of audiometric technicians. Automated audiometry and a central data registry are also being explored.

MICROWAVE OVEN SURVEY . . . BUMED and the Food and Drug Administration's Bureau of Radiological Health (BRH) have negotiated a memorandum of understanding regarding the Microwave Oven Survey Program. Under the terms of the agreement, BRH will calibrate specific microwave oven survey instruments and perform minor repairs on the instruments. Through official notice, BUMED will promulgate dates of calibration and details regarding the calibration service; survey instruments are to be sent to BRH only during the periods identified in this notice.

BRH will also provide forms for collecting microwave oven survey data, and will periodically forward several related reports to BUMED. Survey reports are not to be used until a change to BUMED Instruction 6470.16 is promulgated. The proposed change will include specific instructions on the conduct, documentation, and reporting requirements of a microwave oven survey.

Navy liaison office for the Microwave Oven Survey Program is Undersea Medicine Division (BUMED, Code 5321).

FLIGHT SURGEON MANUAL . . . The revised edition of the *U.S. Naval Flight Surgeon's Manual* will be distributed to all naval flight surgeons at their official duty stations this month. Flight surgeons who want the manual to be mailed to a different address should inform the Commanding Officer (Code 00S), Naval Aerospace Medical Institute, NAS Pensacola, Fla. 32508. People who require the manual but are not flight surgeons should also address their request to NAMI.

TAX RELIEF . . . An amendment to Public Law 95-171 exempts all Armed Forces Health Professions Scholarship Program students from income tax withholding on stipend, tuition, fees, and other educational expenses paid by the government. This tax exemption is retroactive to 1 Jan 1977. It will remain in effect until 31 Dec 1982 for all students who enter the program before 1 Jan 1979. Students who enter the program on or after 1 Jan 1979 will not be covered by this law.

NRDC ORLANDO . . . This new 27-chair naval regional dental center opened 11 Aug 1977 in Orlando, Fla. Under the command of CAPT Harry C. Pund, Jr. (DC), the new center will provide dental care for staff members of Naval Training Center, Orlando, for its three component commands and 23 tenant activities, and for other active-duty members in the central Florida area.

Notes & Announcements

DENTAL CONTINUING EDUCATION COURSES

The following dental continuing education courses will be offered in April 1978:

National Naval Dental Center, Bethesda, Md.

Occlusion	3-5 April 1978
Dental materials	17-19 April 1978

Eleventh Naval District, San Diego, Calif.

Oral surgery	3-7 April 1978
Preventive dentistry	24-26 April 1978

U.S. Army Institute of Dental Research, Walter Reed Army Medical Center, Washington, D.C.

Oral diagnosis and therapeutics	17-20 April 1978

Requests for courses administered by the Commandant, Eleventh Naval District, should be submitted to: Commandant, Eleventh Naval District (Code 37), San Diego, Calif. 92132. Applications for other dental continuing education courses should be submitted to: Commanding Officer, Naval Health Sciences Education and Training Command (Code 5), National Naval Medical Center, Bethesda, Md. 20014. Applications should arrive six weeks before the course begins.

Cross-country travel and travel from outside the continental U.S. to attend dental continuing education courses generally will not be approved due to funding limitations.

NURSE CORPS CONTINUING EDUCATION COURSES APPROVED

The quarterly meeting of the Nurse Corps Continuing Education Approval and Recognition Program (CEARP) review board convened in October 1977 at the Naval Health Sciences Education and Training Command, Bethesda, Md. The following 36 continuing education programs were approved for the contact hours indicated in parentheses:

NNMC Bethesda, Md.
- Theories and Techniques of Crisis Intervention for Nurses (2.5)

NRMC Bremerton, Wash.
- Budget Preparation for Continuing Education and Inservice Divisions (2)
- The Adult Learner—How Do We Meet the Needs? (2)

NRMC Great Lakes, Ill.
- Depression (1)
- Hypertensive Management (1)
- Basic Life Support (6)
- Audit Series for Beginners (6)
- Sex and the Heart Patient (1)

NSMC Groton, Conn.
- Introduction to Nursing Care of Patients Needing Hyperbaric Therapy (2)
- The Abused Child: Nursing Responsibilities (2)
- The Process and Implementation of Performance-Evaluation for Nursing Service Personnel (2)
- Nursing Care of Patients in Traction (2)
- Nursing Care of Patients with Inflammatory Bowel Disease (2)
- Construction of Relevant Nursing Care Plans for Hospitalized Patient (2)
- Nursing Care of Patient Undergoing Radical Head and Neck Surgery (2)
- Intensive Care Nursing Course (30)

NRMC Jacksonville, Fla.
- Hyperalimentation (2)
- Budget and Supplies (2)
- Child Abuse (2)
- Radical Neck Surgery and Tracheostomy Care (2)

NRMC New Orleans, La.
- High Risk Pregnancy/High Risk Newborn (7)
- Psychosocial Aspects of Aging (4.6)
- The Process of Aging—A Multidisciplinary Approach (6)

NRMC Newport, R.I.
- Using Maternal Bonding as Conceptual Framework for Development of Family-Centered Maternity Unit (Category II) (4)
- Newborn Assessment (1.5)
- Maternal Infant Bonding (1)

NRMC Orlando, Fla.
- Changing Concepts in Cardiology and Their Effects on Nursing Practice (1.5)
- Cardiopulmonary Resuscitation (6)

NARMC Pensacola, Fla.
- Cardiopulmonary Resuscitation Basic Rescuer's Course (6)

NH Whidbey Island, Oak Harbor, Wash.
- Child Abuse Today (3)
- Child Growth and Development (3)
- Obstetrical Emergencies (3)
- Current Concepts in Orthopedic Nursing (3)
- Fluid and Electrolytes (3)
- Acid-Base Balance and Blood Gases (3)

U.S. NRMC Yokosuka, Japan
- Communications Workshop (7.5)

Nurse Corps officers interested in attending one of these courses should request a quota from the host command.

Accreditation of the Navy Nurse Corps CEARP by the Northeast Regional Accrediting Committee of the American Nurses Association precludes retroactive approval of offerings. Programs should be submitted for review 30 days before the date they will be offered.

HSETC PROGRAM DIRECTORS

Questions often arise concerning education and training, and no one locally may have the answer. The following is a list of directors at the Naval Health Sciences Education and Training Command who will provide professional and technical advice on continuing education programs.

Code 4: Medical Corps Programs and Clinical Investigations Programs
CDR C.T. Cloutier, MC, USN
Autovon: 295-0584

Code 5: Dental Corps Programs and Dental Technician Programs
CAPT J.B. Holcomb, DC, USN
Autovon: 295-0650

Code 6: Medical Service Corps Programs
LT J.A. Kramer, MSC, USN
Autovon: 295-0624

Code 7: Nurse Corps Programs
CAPT P.A. Butler, NC, USN
Autovon: 295-0630

Code 8: Hospital Corps Programs
LCDR R.E. Newman, MSC, USN
Autovon: 295-1524

Code 9: Subsidy Programs
LT W.M. Oals, Jr., MSC, USN
Autovon: 295-0218

Questions pertaining to available education programs should be sent to: Commanding Officer, Code__, Naval Health Sciences Education and Training Command, National Naval Medical Center, Bethesda, Md. 20014, or phone appropriate number.

MEDICAL SCHOOL LIAISON OFFICERS NEEDED

The Medical Department is looking for Reserve physicians who wish to assume new responsibilities as medical school liaison officers. Originally appointed to recruit and indoctrinate medical students, MSLOs now assist in physician recruiting as well. Specifically, they are being asked to invite active-duty Navy physicians into their schools and civilian medical groups to present professional papers, participate on panels, and in other ways show the civilian medical community the high quality of Navy medicine.

Reserve medical officers are still needed to fill MSLO positions at many medical schools. Interested officers are urged to request appointment through their regional Reserve readiness commanders.

MSLOs are needed at the following schools:

RedCom 1
Boston U School of Medicine
Harvard Medical School
U of Connecticut School of Medicine
Yale U School of Medicine

RedCom 2
Albert Einstein College of Medicine of Yeshiva U
Columbia University College of Physicians and Surgeons
Mount Sinai School of Medicine of the City of New York
New York U School of Medicine, N.Y.C.
U of Rochester School of Medicine and Dentistry
State U of New York at Buffalo School of Medicine
State U of New York at Stony Brook
State U of New York Upstate Medical Center College of Medicine, Syracuse

RedCom 4
The Hahnemann Medical College of Philadelphia

RedCom 5
The U of Pittsburgh School of Medicine
Medical College of Ohio at Toledo
Wright State U School of Medicine, Dayton, Ohio

RedCom 6
The George Washington U School of Medicine and Health Sciences
U of Maryland School of Medicine
West Virginia U School of Medicine

RedCom 7
Duke U School of Medicine

RedCom 8
Emory U School of Medicine

RedCom 9
U of South Alabama College of Medicine

RedCom 10
U of Texas Medical Branch at Galveston School of Medicine

RedCom 11
U of New Mexico School of Medicine

RedCom 13
Wayne State U School of Medicine
Southern Illinois U School of Medicine
U of Illinois College of Medicine
Rush Medical College of Rush University
Medical College of Wisconsin, Milwaukee
Michigan State Osteopathic Medical School
Chicago College of Osteopathy

RedCom 16
U of Minnesota-Duluth School of Medicine
U of North Dakota School of Medicine
Des Moines Osteopathic Medical College

RedCom 18
Creighton U School of Medicine
U of Missouri at Kansas City
Washington U, St. Louis

RedCom 19
Loma Linda U School of Medicine

Others
U of Hawaii School of Medicine
U of Puerto Rico School of Medicine

ABSTRACTS SOUGHT IN FAMILY PRACTICE

The Clinical Investigation Committee, Uniformed Services Chapter, American Academy of Family Physicians, is seeking papers for its April 1978 meeting in Jacksonville, Fla. Honorariums will be given.

Papers will be selected on the basis of originality, appropriateness to family practice research, and depth of statistical analysis. Prospective studies are encouraged. Format will be 10 minutes per presentation, followed by 10 minutes for discussion.

Selection will be made by the Clinical Investigation Committee, in conjunction with the Scientific Assembly Program chairman. Submit abstracts to: MAJ Harry H. Rinehart (MC), Box 859, MAMC, Tacoma, Wash. 98431.

Features

Long Beach Alcohol Rehabilitation Service: A School for Living

COL Edgar A. DeMar, USAFR, MC

Last year, I spent two weeks as a visiting physician on the Alcohol Rehabilitation Service of NRMC Long Beach, Calif. As a Reserve Air Force flight surgeon, I was included in a group of 15 health care professionals—mostly Navy physicians, nurses and chaplains—whose training was guided by the unit's director, CAPT Joseph Pursch, MC, USN. We were there to receive orientation and instruction in the problem of alcoholism; we hoped to gain greater understanding of this illness and thereby to be better prepared to help alcoholics. What actually happened was that each of us during those two weeks came to understand that rehabilitation means helping alcoholic patients reach new insights about themselves, so they can then help themselves begin new lives.

What was so outstanding and different about our two-week experience? Why did we all—patients, staff, families, and visiting physicians—feel so much was accomplished? I should point out that most of the patients who arrive at the Long Beach Alcohol Rehabilitation Service do not think they have any problem with alcohol: it's only after the training begins that the patients—and even a few visiting physicians—discover that yes, they *do* have a problem.

In a way, what happens at Long Beach is fairly simple. It starts with an accepting attitude, which means that your mind is ready to work with and accept new ideas, that your body is physically present in the training sessions, not hurrying to outside activities, and that you are personally and totally involved, not a spectator looking in through a window. Such participation, of course, is the antithesis of the "don't get involved" or "I'm going to stay out of that" philosophy. It seems to me that, be the subject alcoholism, religion, business, law, or any other endeavor, to achieve true success and gratification you must get totally involved and believe in what you are doing. This we did at Long Beach.

COL DeMar is a flight surgeon for United Air Lines, San Francisco International Airport, San Francisco, Calif. 94128, and wing surgeon of the 349th MAW (Assoc.) (AF Res), Military Airlift Command, Travis AFB, Calif.

NO HIDING BEHIND TITLES

We had all heard about the Long Beach Alcohol Rehabilitation Service and were attracted to it because of its reputation. Now, for the first time, we were going to see the ARS in operation and be a working part of it.

As a part of continuing medical education, I had already attended many lectures on alcoholism and seen educational films about the problem. They were interesting, but I had not been touched personally and there had been no close patient contact. So I felt a certain thrill arriving on the hospital ward that first day, reporting for duty but not knowing exactly what to expect. It didn't take long to find out.

We were involved immediately. In a short indoctrination lecture, we were told we would spend most of our time on the ward with patients. We would be on a first name basis with everyone. There would be no hiding behind rank, title, or closed doors; there would be no long absences during the day.

Dr. Pursch quickly pointed out that alcoholism is a chronic, progressive, relapsing disease which may be fatal, but which can be controlled at any time by intervention and rehabilitation. No one individual can treat the alcoholic, he said; a team approach is necessary and continuous follow-up by a peer system like Alcoholics Anonymous as well as by interested and trained health care personnel is essential.

Dr. Pursch stressed that alcoholics are people who have tried to solve their living problems with alcohol, and have failed.

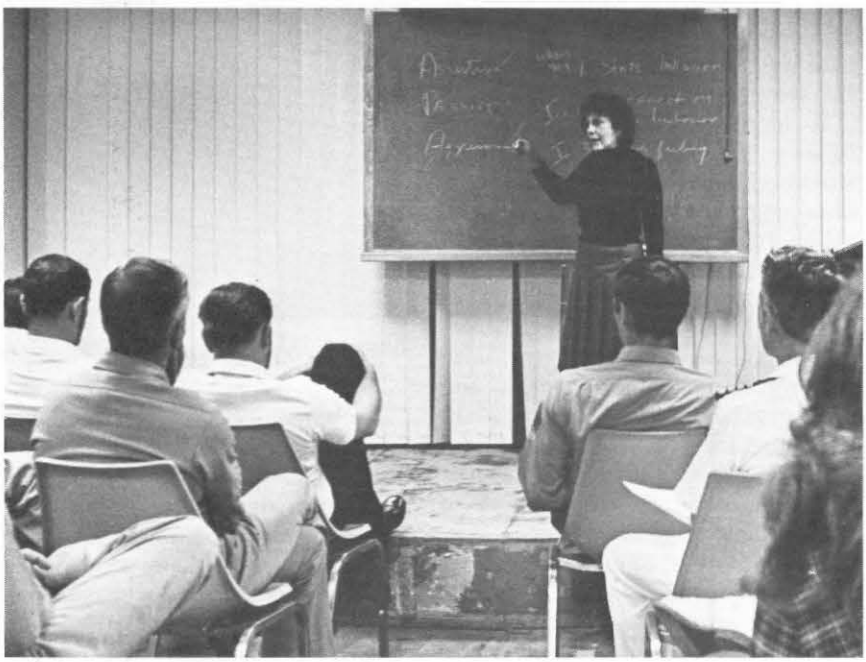
Alcoholism can (and eventually will) cause problems in any part of a person's life—mental, physical, family, financial, work, or with social contacts. I was surprised to learn that many alcoholics do not really want to drink. Some have never enjoyed alcohol, but it has become an uncontrollable compulsion, just like overeating or gambling is for other people. The alcoholic needs help: he cannot resolve his problems alone. In fact, he and his family will often deny that any problem exists.

We also learned that, in general, health care deliverers have done a poor job of creating a favorable atmosphere in which the alcoholic can begin his recovery, or in eradicating alcoholism—now the third largest health care problem in our country. (It is surpassed only by cardiovascular disease and cancer.)

While learning about alcoholism, we began to learn a lot about ourselves. For example, some of us had been avoiding alcoholic patients for one reason or another, perhaps because we could not get a 100% cure every time. Some of us were discouraged by our belief that alcoholics never change and always end up drinking again. But as our awareness of the alcohol disease problem grew, we learned that it can be successfully treated in up to 90% of patients. And we ourselves saw people "change" during our short stay in Long Beach, and met speakers, therapists, and alumni who had been abstinent, sober, and successful for 20 to 30 years.

DIRECT AND SINCERE

Group therapy is used extensively in alcoholic rehabilitation programs. It helps establish communication, freeing participants to discuss and evaluate long-blocked thoughts and emotions. So frequently in our lives the simple job of communicating is stymied. Group therapy provides a natural outlet.



Civilian psychologist, Vivian Gary, Ph.D., conducts assertiveness training for participants in Long Beach Alcohol Rehabilitation Service

In the ARS, alcohol drinking ended quickly. Within three to five days, most patients were free of the acute effects of alcohol withdrawal. Resolving the deeper problems behind acute alcoholism became the real challenge. These problems had to be brought to the conscious mind where they could be discussed, evaluated, and resolved; if this important work is not done, the patient will almost certainly resume drinking after he leaves the hospital. To help with this phase of rehabilitation, we met daily in small encounter groups of eight to ten people under the guidance of a counselor who was, in most cases, a recovered alcoholic.

We began to learn about each other by speaking directly and sincerely, and always on a first-name basis. We tried to be ourselves, stripped of our facade and defenses. We spoke with understanding for the other member's problems, treating all participants with respect and dignity, and careful to use the first person singular "I think," rather than the impersonal "one thinks."

Upon arrival in a group, each new member briefly described his personal life, telling why he came to the ARS, what his drinking habits were, and what he thought about them. We visitors were no exception to this rule.

Since we met in groups for more than an hour each day, it became very difficult *not* to get involved in conversations with others, even though some people took several days to start describing their deeper thoughts and feelings. By freely discussing problems of different members of the group, we soon recognized that we *all* have problems in our lives, and that it helped to discuss them. In the process, we all learned the meaning of humility. We came to realize that our own mental defenses were often very similar to those used by the patients: the defenses differed in quantity rather than type.

COURSE OF ALCOHOLISM

Although alcoholics may deteriorate in different ways, they end up at the same discouraging place. Alcohol becomes the center of the alcoholic's life, affecting his whole being. He has no control over it. Blackout periods may last for hours, even days. In a blackout the alcoholic may drive an automobile, hold up a bank, treat patients, or carry on conversations about important matters—but he will not remember any of this later. The final disposition of the alcoholic will be the hospital, jail, or death.

But this dismal outcome can be avoided if recovery from alcoholism takes place. Recovery begins when someone recognizes the alcoholic's problem, confronts him with it, and somehow gets him into rehabilitation. After some initial resentment, the alcoholic usually accepts help and begins his recovery.

At NRMC Long Beach, patients respond well to treatment for alcoholism and have a high recovery rate. It is difficult to define just what factors influence this transformation. There are many good reha-

bilitation centers in both military and civilian environments, but what distinguishes the Long Beach program is an outstanding attitude of concern for the patient demonstrated by the entire staff. Their only objective is to help the alcoholic patient recover and to give him a fresh start on a new life.

I sensed this spirit of concerned cooperation in doctors, nurses, counselors, corpsmen, and clerks. It certainly eased the patients' task of learning about their disease and adjusting their mind and body to do without alcohol.

At Long Beach, a controlled environment is necessary for the first two weeks of rehabilitation. During this time patients are restricted from overnight passes and leave. This restriction helps reduce the opportunity for exercising bad judgment during the early phases of learning about alcoholism, and helps the patients adjust to a more normal way of life.

Families are encouraged to attend lectures and group therapy, since they are so deeply involved in the effects of alcoholism. As the patient learns to talk about his problem and gains insight into it, he can discuss his condition with his family and new-found friends. His attitude toward his disease often changes so completely that he becomes interested in helping others with the same problem—an ambition that can be satisfied individually as well as through the fellowship of AA.

It is a misconception that the derelict comprises the majority of alcoholics. At the ARS, patients come from all walks of life—physicians, nurses, chaplains, attorneys, pilots, mechanics, and many other vocations. No group is immune. These are the people who live next door, who work and socialize with you, or with whom you practice medicine.

For fortunate recovering alcoholics, rehabilitation means a fresh start. But important as rehabilitation is, it is worthless without continuous follow-up care provided by an interested, concerned person or peer group. The recovering alcoholic thus uses "people support" rather than drugs to overcome periods of anxiety or depression which may occur, especially during the first two or three years after rehabilitation. This support of friends, AA, or church associations rescues the person from solitude—one of the worst forms of punishment, in or out of confinement.

WHAT CAN WE DO?

Like the Biblical prodigal son, the alcoholic is hurting and in pain. He will change only when he finds himself, when others no longer cover for him or lie for him and thereby help him get sicker. To that end, nonalcoholic people need to understand alcoholism so they can provide the only real help: pushing the alcoholic into rehabilitation.

If alcoholism is a disease, it follows that health care professionals should take a leading part in obtaining proper care and rehabilitation for alcoholics. First, health care personnel must recognize the disease, even when the patient or his family denies its presence. Alcoholism has an insidious onset, with varying signs and symptoms, and can cause problems for as long as 13 years before some major incident confirms the diagnosis. With addiction to alcohol, the compulsion to continue drinking is great.

It is a waste of time to look for an *alcoholic*; physicians should look instead for signs and symptoms of alcoholism. Alcohol may cause tremors, insomnia, blackouts, or hallucinations. Frequent injuries, bruises, gastritis, pancreatitis, hepatitis, and bleeding abnormalities must all be suspected as having their origin in alcohol abuse. Tachycardia, hypertension, flushing, and agitation may be present. Also indicative of alcoholism are family problems, poor work records, old rib fractures, or frequent fights.

Liver function tests and blood studies revealing anemia and high blood alcohol levels are a few of the laboratory tests which help physicians make the diagnosis.

When the diagnosis of alcoholism is confirmed, the physician must confront the alcoholic with the findings and inform him of the destructive course of the disease. Ideally, it is best to make this confrontation in the presence of the patient's family, friends, or employer. Asking their help involves these significant people in the patient's recovery and increases his chances for success.

ARS training includes group discussions

Responsibility for his behavior must remain with the alcoholic. If and when the alcoholic accepts treatment, the physician must not only be aware of treatment centers in the community (or elsewhere), but must also arrange a consultation for the patient or admission to a hospital if necessary. If the physician does not make this extra effort, the patient seldom will.

Not every report in the ARS files is a success story. But enough patients do recover from the devastating effects of alcohol abuse, achieve sobriety, and return to productive service to make the Navy's investment in the program worthwhile. It remains for all health care personnel to educate themselves about the effects, signs, and symptoms of alcoholism, and with compassionate concern to support the alcoholic on his journey to recovery.

Medical Technology Assessment in the United States

CDR Thomas McCarthy, MSC, USNR-R

The literature on the impact of medical technology on specific diseases has been extensive in the U.S. during the past decade. However, only during the past three or four years have studies focusing on practical applications concerned with assessing the relative costs and societal benefits that accrue from new technologies become prominent. This development stems largely from a somewhat belated realization among governmental and private-sector officials that available resources, even in a country as affluent as the U.S., are indeed limited, and that expenditures for health care amounting to close to 9% of the gross national product may be approaching the upper limit that our society will accept.

Research by institutional and industrial organizations and academic centers on assessment of medical technology, however, is still in its formative stages. We do not have any clear understanding of either the processes of technological diffusion or the full range of the effects and impacts of technology. So the challenge of constructing theories and methods of assessment has led to multifaceted activity by many groups, including the U.S. Congress and several agencies of the Executive Branch of the federal government, as well as universities, the business community, and professional health groups. Let me illustrate this pluralistic attack by identifying some federal government organizations active in this field.

The Office of Technology Assessment, for example, in existence for only three years, was established by the U.S. Congress to conduct short-term policy research designed to identify alternative approaches to technology-related issues in many areas, including health, and to provide objective analysis of the probable cost/benefit consequences of choices among those alternatives.

In the Executive Branch of government, the National Science Foundation participates in projects to evaluate the longer-range societal impact of technological development, including development of health care technology.

Within the Department of Health, Education, and Welfare (HEW), the National Institutes of Health, and especially the National Cancer Institute and the National Heart and Lung Institute, are exploring possibilities of requiring cost/efficacy assessments of all technological developments as they may affect health services that emerge from biomedical research programs supported by the institutes.

Of course, considering pharmaceutical agents as technological products, the longest established and most pervasive technology assessment program in the U.S. is conducted by the Food and Drug Administration of HEW. This agency regulates—with the power of severe federal sanctions, fines, and jail sentences—introduction of new pharmaceutical agents and medical devices into general medical practice. Policies are based on the efficacy of the product, its safety, and absence of fraud in its production and distribution.

So far I've mentioned government agencies primarily involved in assessing the efficacy of new technological developments and their introduction into the mainstream of medical practice. What about existing, available technologies? Here, with the concept of assessment broadened to embrace some estimates of the amount or quantity of a technological capacity needed to meet the health care service requirements of a population, agencies responsible for paying the costs of utilization of technology come into play.

The newly established Health Care Financing Administration within HEW is involved in examining the cost/benefits of applications of existing technologies. Under 1972 legislation establishing professional standards review organizations, for example, this agency is setting up a nationwide network of groups of local physicians who review the appropriateness of care provided by their peers, including use of costly forms of technological intervention and unduly elaborate facilities provided patients whose care costs are reimbursed from federal sources.

The Health Resources Administration—the HEW agency with which I am associated—is establishing state and regional health planning mechanisms, with one function of these planning agencies being to match the supply of available technologies with health care service needs. Under the National Health Planning Resources and Development Act of 1974, for example, my agency is setting up a "certificate of need" program which requires evidence that investments in *new* medical facilities or equipment in each state and local health services area are justified on the basis of inadequate existing service capacity to meet the require-

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ments of the population residing in those areas. Currently, 29 states have such certificate-of-need laws; another 39 states have signed agreements with HEW to participate in a process of review prior to approval of capital expenditures for health purposes.

At the federal level, the Bureau of Health Planning and Resources Development—a part of my agency—issues guidelines that state and local planning agencies use in their review and approval of new facilities and technology; the Bureau also provides technical assistance to these agencies both directly and indirectly through document and publication services and support of planning, research, and training centers.

Beyond the federal government level, state and local governments, which also pay for health care services, can exert direct control over introduction of new technologies or use of existing technologies—but they rarely do. Likewise, agencies and institutions in the voluntary and private sectors also can play important roles. For example, the National Blue Cross Association and the Blue Shield Plans, and other so-called "third-party payers" or insurance carriers, frequently re-examine existing (and new) technologies to determine whether to cover associated utilization charges in their insurance benefits. For example, the Association of Blue Shield Plans is just completing a study of existing surgical procedures to determine the extent to which these procedures may be outmoded or redundant.

The Institute of Medicine of the National Academy of Sciences, an independent organization chartered by Congress many years ago, is an important private resource for technology assessment research. I'll refer to one of its studies later.

ASSESSMENT RESEARCH

What are the results of all this activity? As you know, the U.S. health care system is anything but monolithic in its organization. No one private organization or governmental unit controls all or even significant portions of the system's functions. Consequently, no one governmental unit or private sector organization can take sole or overall responsibility for addressing broad policy issues—such as assessment of existing health practice technologies—with any expectation that it can totally control implementation of the results of its efforts. This is part of the American political system of checks and balances. Decisions about the use of health technology assessment in the U.S. must have a diverse and pluralistic base. Under our current arrangements, successfully coping with problems of medical technology utilization depends upon the consent of many disparate agencies and organizations.

This leads me to the first point I want to emphasize in these remarks: research in health services—in this instance, medical technology assessment—must be the major factor in providing the foundation for accommodating competing interests in arriving at sound decisions about technology investments.

Before discussing some general areas of concern in health technology assessment research, I would like to review recent initiatives taken by HEW's National Center for Health Services Research, which I helped set up and where I served as its first deputy director until assuming my current position. The National Center, in its formative stages some 10 years ago, recognized that health care technology should be one important and integral area of its work. At that time, we attempted to structure a national research policy to address what appeared to us to be an important evolving issue: cost-effective technology. I can say in retrospect that we have been disappointed in the results to date. Not that we haven't produced some interesting assessments and plans, but that the issues simply are more complex than we appreciated, and we were probably trying to push solutions rather than to formulate more critical questions.

A number of studies, however, have been completed over the years which specifically relate to the larger social and economic impact of medical technology. These include evaluation of high-cost health care for end-stage kidney disease, identification of the incentives and decision processes underlying hospitals' adoption and utilization of major capital equipment, and quality of performance in terms of costs and benefits of automated diagnosis and multiphasic screening.

I would like to discuss briefly one recently completed study conducted in Boston. Six specific pieces of costly medical equipment were evaluated in terms of costs and benefits to patients cared for in 15 area hospitals. The items evaluated were: cardiac catheter laboratories, automated diagnostic X-ray machines, computers, automated blood analyzers, patient monitors, and automated laboratory washing machines.

The results of this study indicated that much of the equipment's capacity was unused. In the 15 hospitals, utilization rates of 50% to 60% of capacity were found for autoanalyzers, diagnostic X-ray machines, and patient monitors. The study also found that hospital decision-makers did not seem to employ systematic, quantitative methods for evaluating the costs and benefits of prospective equipment purchases.

Furthermore, for this sample of hospitals the direct contribution of such hospital equipment expenditures was about 9% of the total per diem cost inflation over the period examined. These data suggest that the cost of complementary inputs, such as additional staff, may be more important in explaining cost inflation than direct expenditures on the equipment itself! Much of the equipment studied also exhibited a rapid rate of technological obsolescence, with the expected life of some equipment only five to eight years.

Not surprisingly, this study also suggests that the proportion of hospitals adopting new and costly technologies in the U.S. is related to the ability of an area to pay for services. This is inferred from the positive rela-

tionship between the level of adoption and the extent of third-party insurance coverages, per capita income, and philanthropy. In a sense, advanced technology follows the availability of money.

The National Center early on also sponsored various studies assessing applications of computer technology, especially as it relates to consolidated hospital systems where automated medical records and billing are frequently managed through a centralized system. Overall, results emerging from these studies suggest that such systems offer several advantages:

- reduced clerical and personnel costs.
- reduced lost charges and rejected claims.
- increased cash flow.
- improved professional communication and continuity of care.
- improved patient record availability.

The disadvantages seem to be:

- a potential for invasion of privacy.
- increased annoyance to professionals who are required to structure their inputs to the system.
- increased technical costs, especially in the developmental phase.

Two areas in which medical technology assessment has come under particular scrutiny in the U.S. are its application to rural health care and to long-term care and catastrophic illness.

As you know, areas of low population density present special problems with respect to provision of health services. Mobile units to provide part-time clinic services are being widely employed in dispersed areas and now are being assessed more carefully in such areas with respect to their utility. The most elaborate mobile facility unit yet developed in the U.S. was provided under a project which attempted to utilize applications from costly space technology in providing rural health care on the Papago Indian Reservation near Tucson, Ariz. This mobile unit has two examining rooms; X-ray, laboratory and pharmacy facilities; sophisticated telecommunications; a computer-based medical record system; and a self-contained electrical generator.

The results of this and similar units, as determined from studies sponsored by the National Center, suggest that although mobile units can provide services to patients who have inadequate transportation, reduce investments in duplicative equipment and supplies, and command substantial resale value, they have severe disadvantages. Specific disadvantages are: high operating costs, loss of service time while the unit is in transit, and loss of privacy, with associated noise problems. Final assessment, however, remains to be made.

Another highly questionable application for rural areas involves telecommunication technology. Evaluation of findings from National Center studies suggests that the advantages lie in reduced patient travel time and inconvenience, an enhanced attractiveness of remote sites to physicians, and better conditions for patient services. However, disadvantages are increased costs (especially for long-distance telephone and television systems), inconvenience associated with teleconsultation, and inadequate telephone services in rural areas to support the system.

Turning now to long-term care and catastrophic illness, we are all aware of the so-called "aging" of the population, not only in the U.S., but in most western societies. The health care needs of the elderly are assuming a higher priority, as is a new effort in the U.S. to protect people against catastrophic economic effects of extended or highly complex and rare illnesses.

Use of costly life-sustaining technologies for long-term care and chronically ill persons recently came into national prominence in the U.S. because of Karen Quinlan. The parents of this 20-year-old girl presented and won a State Supreme Court case which allowed them to take their comatose daughter off a life-sustaining respirator against the objections of the hospital staff, after the medical community had agreed that she could never be restored to an independent life. As a result of this and similar cases, the public is increasingly questioning why it should pay for technology to support life when the costs are excessive and the patient's chances for a normal, productive, or satisfying life are practically nil. There has been a somewhat bizarre, but socially instructive twist to the Quinlan story: when the "plug was pulled" on the equipment believed to be the only means of sustaining the patient's life, she did not die; to this day she lives, although in a deep coma and with no awareness. One truly must pause and reflect on the limits of our empirical knowledge, particularly when making life or death decisions.

In this instance, the benefit assessment problem involves deep and profound moral and ethical questions which, in a normative sense, can be addressed by properly designed research.

The ethical and social issues involved in achieving equity in access to and use of services when the service at question involves very costly equipment, procedures and manpower, and when the incidence of the illness is small relative to the whole population, were the subject of a 1973 study by the National Academy of Sciences Institute of Medicine. The study was prompted by national legislation authorizing public payment for renal dialysis and kidney transplants for end-stage renal disease. The basic question addressed was, If, for whatever reasons—cost, limited capacity, location—a service cannot be provided to everyone, every place, on what basis should selective access be made available? The Academy recommended against public coverage of health care costs in a disease-by-disease approach, and identified the kinds of studies that should be conducted before additional diseases were covered.

The possibility of a totally implantable artificial heart loomed large in the Academy's deliberations. A companion study on that development, conducted by the

Hastings, N.Y., Institute of Society Ethics and the Life Sciences, proposed the view, not unanimously held by all participants in the deliberations, that the only equitable solution seemed to be a random selection in the form of a lottery, rather than a first-come, first-served method or more complicated attempts to set up "citizen" selection groups.

The second point I want to emphasize in these remarks is that we are finally beginning to face the fact that for some health care problems there are no final solutions in terms of social benefits and costs. Rather there are only tentative, working solutions, which periodically must be adjusted to changes in the iterative, continuing attempt to find the optimal socially acceptable coping formula.

TECHNOLOGY'S IMPACT

In considering the impact of technology on health care generally, and medicine particularly, from the vantage point of the U.S., it may be helpful to compare historical developments in that country with developments in, for example, the United Kingdom and the Soviet Union. After World War II the Soviet Union appeared to emphasize distribution of resources and access to health care services, particularly through development of primary health care centers and clinics, and training of feldschers. The United Kingdom emphasized upgrading the quality of care, particularly in district hospitals, by training first-rate consultants; these consultants provide secondary care services to support a reasonably mature general practitioner service, structured to deal with problems of distribution and access. The U.S., recognizing the essential requirement of an adequate knowledge base for clinical medicine generated by the fundamental biological and behavioral sciences, placed its emphasis on laboratory research and the associated development of tertiary "superspecialty" services. All three nations now recognize that a balanced health care system requires appropriate mixes of primary, family or general health care services; specialty, consultant or secondary care services; and superspecialty, or tertiary care services. Also, each level of care needs to have an adequate scientific base, and needs to be monitored with respect to its accomplishment of objectives.

In the U.S., massive outpouring of funds from the National Institutes of Health, directed at support of laboratory research, training of superspecialists, and provision of tertiary care, resulted in the virtual demise of organized systems of primary care services, especially family medicine. This, in turn, resulted in an uneven quality of care at the level of the community general hospital. University medical centers lost interest in common, early, and general manifestations of ill health and morbidity in the population, and focused their attention on uncommon, unusual, complex, or "interesting" problems. Use of "interesting" problems for education and training, reflecting the particularized interest of the physician or investigator, was not necessarily best for meeting the range of patient needs. By concentrating attention on this relatively small proportion of the medical problems in the U.S. (and an even smaller proportion of the world's medical problems), the American health care system became seriously unbalanced.

Investigators pursuing their concern with tertiary care problems, and encouraged by their peers in endeavors to understand and modify disease processes, inevitably pursued technologic solutions. The pursuit was aided and abetted by the societal context—that is, the larger society, pervaded by technology and technological solutions to societal problems (of which the automobile, as the major form of transportation, is the prime cultural factor), which provided a most supportive environment for an emphasis on medical technology.

Increasingly elaborate technologies proliferated to treat relatively rare diseases and chronic diseases that beset a small proportion of the population. These technologies were dubbed "halfway" by Lewis Thomas because they treat the consequences of the disease in the absence of full knowledge of the disease itself. Today, the world, including the U.S., is beginning to recognize an urgent need for less complex, low-cost, high-benefit technologies for common problems that affect many if not most of the people, frequently.

Efforts in this direction necessitate that questions be asked about the nature of those common problems and the appropriateness of any current or proposed technological development. Diagnosis and treatment of common problems, such as backache, chest pains and headache, when first encountered at the level of primary care, may not be significantly enhanced (considering both benefits *and* costs) by complex technological advance alone. This point can be illustrated by the proliferation of computerized axial tomography scanners in the U.S. The CAT scanner is a remarkable technologic advance that is used to detect brain tumors and that may be of great value in helping to diagnose head injuries, strokes, and even headaches. But while such technology is highly valuable when used appropriately, there has been little organized research to develop appropriate algorithms for its use.

To date there are only one or two randomized clinical trials of CAT scanners, and these studies indicate no impact on mortality incidence. Unless there has been some recent unpublished research, there seems to be no evidence that CAT scanners will prevent death.

Although impact on mortality rates is an important criterion for assessment, it is not the only one. There is, after all, societal value in reassuring a patient with a headache that he does *not* have a tumor. For these purposes the question then becomes, What should be the extent of a nation's investment in CAT scanners? There is no single correct answer to this question: it is simply

a matter of how a nation chooses to spend its money. For example, the United Kingdom expects to have about 25 CAT scanners for its 55 million people; the U.S. will soon have 1,400 scanners, at a cost of about $650,000 each, for four times that population.

This is a massive social investment. Moreover, when the epidemiological distribution of the key problem for which the CAT scanner is appropriate is examined, the imbalance seems remarkable. In a recent year, 6,300 people died of brain tumors in the U.S., but 23 million persons admitted to having recurring headaches. If everyone who had a tumor also had a headache, the risk of having a brain tumor seems to be 1 in 30,000 persons. The U.S. will shortly have a capacity for providing an annual brain scan for 1 person for every 60 (with or without a headache) in the population. Clearly, the question is, How do you want to spend your money?

In the case of brain tumors, usually nothing can be done to save the patient's life; in the case of headaches, most family physicians know that they are frequently associated with domestic quarrels, excessive alcohol consumption, or occupational strains. On the basis of good medical practice, then, simple low-cost treatments are most likely to be effective. Little of life-saving value can be offered to the patient by performing another expensive test with a CAT scanner; at best, this use of technology is an extremely expensive form of reassurance.

HEALTH CARE DECISIONMAKING

I wonder how well prepared the medical profession is to deal with such rapid advances in technology, and with their social consequences. We have seen a tendency to look for technological "quick fixes" for complicated problems in our health care industry—and not without some success, such as the polio vaccine. We seem to have constantly looked for solutions to problems that were "interesting," without first making sure we were defining the problem appropriately and taking into consideration ultimate social costs and benefits.

We also keep looking for the "silver bullet": a single solution to a complex problem. An early "silver bullet" was extensive proliferation of short-term, acute-care hospital bed capacity. That policy initiative then was associated with massive investments in biomedical research (with the side effects previously noted). The next substantial concentration of effort was on expanding health manpower supply. That effort was followed by recent concentration on a legislative mandate for the health planning process.

Now the quick fix in vogue is "TA," or technology assessment. The U.S., through its National Center for Health Services Research and Development, suggested in the late 1960's that large-scale experiments needed to be mounted if the nation was to move towards nationalization of its health services. In the area of health care technology, it now seems clear that not only are more clinical trials needed to establish efficacy, but also, before large-scale diffusion of technological results, regional large-scale testing of the effectiveness and efficiency of such technologies needs to be conducted.

There are, in fact, the beginnings of such an attempt in the State of Iowa. The legislature in that state recently amended the State Certificate-of-Need Law and directed the University of Iowa Hospital and Clinics to evaluate new, currently available medical technology as well as all new health services. This innovative strategy in Iowa will be followed very carefully by the federal government over the next months. As suggested earlier, however, such studies will not provide clear-cut, finite solutions. Social, ethical, and economic priorities must be carefully considered along with empirical efficacy, effectiveness, and efficiency testing results; in short, complex societal judgments are involved.

The recent U.S. decision to abandon development of a supersonic transport is a good nonmedical example of this judgmental process; in this instance, a powerful nation, with an enormous capacity, rejected a major technological development based on "an assessment" dominated by considerations of potential *social* good. The issue of speed was given full consideration, but the decision was still negative. This outcome appears to have been achieved through the heavy involvement of politics, business, and society at large in the decision; one-track thinking—that is, the rationale of the aircraft industry—was not allowed to dictate policy.

The question I would like to pose is whether or not our SST decision may represent a rather new generic *class* of decisionmaking emerging in the industrialized world relative to technology assessment and its transfer —including health care technology. Such a development could signal the end of the relatively unfettered societal delegation of decision choices to professional experts—no matter how complex the technology—that has characterized developed countries for so long.

My own feeling is that decisions in health care will more and more be in the same class as the SST decision. I believe this to be the case even though the creativity and innovativeness that should characterize the industry in its efforts to conquer illness, to relieve pain, to ameliorate the handicapped, and to resist the indignities of life's afflictions seem to set health care apart from other technologically involved industries. But I also believe that since physicians are accorded a special status in western society, they must assume a special accountability for what transpires in the provision of health services. Since physicians foster the use of technology, they must also lead in helping society guard against the abuse of technology. This means that physicians must learn to be effective participants in the emerging societal decisionmaking process, and must "de-learn" past habits of exclusive, unchallenged decisionmaking.

It also seems to me that when we discuss "technology" activity in the health care sector, we frequently

overemphasize the hardware or mechanical aspect of technology and do not examine in any depth potential use of technologically based capabilities in a "systems" sense. We rather forcibly ignore the need to pay attention to consumer responsiveness and expectations, to moral and ethical choices, and to society's other social priorities.

Finally, I have a deep feeling that we all need to be cautious and not embrace too emotionally the concepts of technology assessment and technology transfer. We might be falling into the same kind of trap we fell into with "operations research" after World War II. Because of its success developing radar to detect enemy bombers, this type of systematic thinking was believed to be useful in solving organizational problems in meeting social services: the world could be reduced to mathematical models to identify "optimal" solutions to problems and to define the best implementation of those solutions. Somehow, it has not happened. A similar fate could befall technology assessment, I fear, if we are not careful.

To avoid this pitfall, a principal consideration in developing and distributing technology must be to base our decisions on improved determination of health needs; this means, in turn, that we must increase our research on assessments of health status and perceived need. Improved methods of assessing the consequences of research itself and on ways to use resultant new technologies must be developed. Also, these new methods of assessment must yield information that can be used in more broadly based processes of decisionmaking.

I believe that the public has to become more involved in the decisionmaking process. But to help them make informed decisions, they must be provided with valid, reliable information that they can understand.

For all these reasons, it seems necessary to call for closer monitoring of research, for more studies on the implications of research, and for evaluation of our methods of assessing safety and efficacy. Finally, government should encourage the disclosure of adequate information to the public.

Advances made in the health care field since the end of World War II have been truly significant and have changed life for the better. Future advances can be expected to bring further improvement in the quality of life. However, it is now time for a new perspective for balancing investments among different parts of the research enterprises. It is time to set national goals and priorities and strategies in terms of desired and expected outcomes. It is time to reconcile advances in technology with the economic, moral, and social systems in our environments.

These remarks then, embracing economic, social, and ethical judgments, along with empirical research of various types, represent my attempt to articulate an initial framework for addressing the very complex problem of the impact of modern technology on provision of health care services.

Preventive Medicine

Giardia lamblia

The small (9-21 microns) parasite known as *Giardia lamblia* infects the upper portion of the small intestine, attaching itself to the intestinal mucosa by means of a modified ventral "sucking disc." This parasite has long been considered basically nonpathogenic, and is often found in asymptomatic individuals. However, there now seems to be abundant evidence of pathogenicity of giardiasis. In addition to the considerable irritation caused to the intestinal tract by the attachment of this parasite, its presence may give rise to a range of problems from mild diarrhea, flatulence, anorexia, and abdominal pain to a full-blown malabsorption syndrome.

The distribution of *Giardia lamblia* is worldwide, with socioeconomic conditions influencing its prevalence. Poor sanitation, particularly inadequate water sanitation, tends to precipitate outbreaks of giardiasis. Epidemics, although not usually seen, are a distinct possibility. One outbreak reported during the 1965-1966 ski season in Aspen, Colo., was ultimately traced to contamination of well water from leaking sewage pipes. Also in 1975, some 650 American and Scandanavian travelers returning from the Soviet Union were infected in a near-epidemic.

Treatment with quinacrine hydrochloride can be long and involved, and there is no safe and effective drug prophylaxis. Control is aimed at prevention in the form of increased sanitary precautions. Particularly abroad, Medical Department awareness of this problem is essential to preventive health care.

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Professional

Stomatitis Medicamentosa Associated with Gold Therapy for Rheumatoid Arthritis

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Chronic arthritis is the number one crippling disease in the United States, affecting over 10% of the population and claiming 60,000 new victims each year. Rheumatoid arthritis, which affects five million Americans, is the most serious of the arthritic diseases because of its crippling potential (*1*). Its etiology is unknown and no cure has yet been developed.

Fortunately, various modes of treatment, including physical therapy and systemic medications, are available to alleviate the symptoms of rheumatoid arthritis. Notable among the many drugs used to treat this disease are salts of the most noble metal, gold. Systemic gold salts, however, produce a high incidence of stomatitis medicamentosa. Very little has been reported in the dental or medical literature regarding the etiology, pathology, or treatment of these oral manifestations.

Injection of gold salts, or chrysotherapy, has been used to treat joint diseases for 50 years (*2*). At the present time, chrysotherapy is an accepted mode of treatment for active rheumatoid arthritis. Its use is indicated early in the therapeutic course for patients who have not responded well to salicylates, heat, and physical therapy (*3*). When this criterion of patient selection is employed, most patients experience a decrease in acute inflammatory signs and symptoms, and the progress of the disease may be retarded, as evidenced radiographically (*4*).

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Sodium aurothiomalate and sodium aurothioglucose are the most commonly used gold salts. After several small challenge doses, weekly injections of 50 mg of gold are administered up to a total of 0.8-1.5 gm gold or until toxic reactions occur. If the therapy has been successful in producing remission, maintenance injections of 50 mg gold every two to four weeks may be administered indefinitely (*3,5*).

How gold acts to alter the course of rheumatoid arthritis is not yet fully understood. When administered intramuscularly in aqueous preparations, the salts are rapidly absorbed. Gold is deposited in cells of the reticuloendothelial system and is concentrated in inflamed tissues, notably in inflamed synovial membranes. Clinically painful joints are reported to concentrate 2.5 times more gold than asymptomatic joints (*5,6*). While there is strong evidence that toxic reactions to gold salts are mediated immunologically (*7-9*), several studies have concluded that gold does not influence the course of rheumatoid arthritis by any action upon the immune response (*10,11*).

It has been demonstrated that gold is concentrated in the lysosomes of phagocytic cells, notably macrophages, and that it inhibits lysosomal hydrolases (*12*). Mycoplasma organisms have been indicated as possible etiologic agents in rheumatoid arthritis (*13*); animal studies have shown gold to suppress these organisms and the arthritic lesions they cause (*14*). It also has been reported that the stability of collagen increases in the presence of gold (*15*).

The main objection to the use of chrysotherapy is the accompany toxic reactions reported to occur in 32% of patients at the presently accepted therapeutic dose regimen (*3*). The most common toxic

reactions are dermatitis and stomatitis, which are rarely debilitating. A significant number of patients, however, do develop severe complications, including nephrotic syndrome, hepatitis, thrombocytopenia, agranulocytosis, and aplastic anemia. Severe toxic reactions call for immediate cessation of therapy, while minor complications may be overcome by a reduction of dosage or by omitting one or several injections. There does not appear to be any well-defined relationship between the occurrence of toxic reactions and the success of therapy at producing remission in individual patients (*16*).

Stomatitis resulting from chrysotherapy can occur on the lips, gingiva, tongue, palate, or buccal mucosa and is sometimes accompanied or preceded by a metallic taste. The reported incidence is extremely variable, ranging from 5% to more than 60% (*17,18*). In studies of patients receiving weekly dosage of more than 50 mg gold, stomatitis occurred significantly more often than when 50 mg or less gold was administered weekly (*19*). Aqueous preparations apparently produce a greater incidence of stomatitis than oily suspensions (*18*).

The reported severity of stomatitis ranges from localized erythema and tenderness to ulceration or desquamation of large areas of mucosa, accompanied by severe pain and dysphasia (*19*). Symptoms may resolve in a short time with or without cessation of chrysotherapy, or they may run a protracted course of many months as was true with the patient described below.

PATIENT REPORT

In June 1976, a 21-year-old Caucasian female was referred from the Rheumatology Clinic to the Dental Service at Naval Regional Medical Center Oakland, Calif., for evaluation and treatment of oral symptoms.

The patient had been diagnosed in August 1975 as having classic rheumatoid arthritis. After unsuccessful courses of therapy with salicylates and ibuprofen, chrysotherapy was begun in November 1975. Following challenge doses of 10, 25, and 35 mg gold on successive weeks, 50 mg per week of gold in the form of sodium aurothiomalate was administered by deep intramuscular injection. After she received 1 gm of gold, the patient was in nearly complete remission. Maintenance therapy consisting of 50 mg sodium aurothiomalate monthly was begun.

Six weeks before she was seen in the Dental Service, the patient had her ears pierced and began wearing 14-karat gold ear-posts. Two days later, serous drainage began from the ear lobes and three weeks later a pruritic urticarial eruption appeared. This eruption began five days after gold salts were injected on the skin of the ears and mastoid areas; within 72 hours the eruption involved the patient's neck, back, and upper chest. The gold ear-posts were removed and the patient was treated with systemic triamcinolone acetonide and diphenylhydramine hydrochloride. The rash resolved in four days; chrysotherapy was not interrupted.

The patient presented to the Dental Clinic in June 1976 with a chief complaint of discomfort of several months duration in the maxillary anterior area and mandibular left posterior area. The patient said that the pain was severe and accompanied by spontaneous bleeding on the days of gold injections and the first few days immediately following.

Examination in the Dental Clinic revealed pericoronitis around a partially erupted mandibular left third molar, and diffuse generalized severe gingivitis with gross accumulations of plaque and calculus. For four years the patient had been successfully wearing a gold alloy removable partial denture which replaced the maxillary left central incisor and the right cuspid and central and lateral incisor teeth. The palatal mucosal beneath the removable partial denture exhibited some papillary hyperplasia, was fiery red, and bled with minimal stimulation.

The gingivitis was treated with an initial scaling of the teeth and plaque control instructions followed by plaque removal at two-week intervals. The pericoronitis was treated by extracting the third molar teeth and administering systemic phenoxymethylpenicillin. At the end of two months the gingivitis was markedly reduced, but the palatal mucosa underlying the removable partial denture remained inflamed and tender. At that time it was elected to replace the gold alloy partial denture with an acrylic resin prosthesis as a diagnostic aid.

During the next six months the palatal inflammation improved but portions of the mucosa remained red and tender, becoming more symptomatic on and immediately following days when gold injections were given. The involved mucosa bore no relationship to the tissue covered by the new prosthesis, but rather corresponded to the area previously in intimate contact with the gold alloy denture base.

Upon consultation, the Dermatology Department performed standard 48-hour patch tests with 24-karat gold foil, metal from the patient's gold alloy removable partial denture framework, chromium, nickel, and cobalt, as well as intradermal testing with sodium aurothiomalate. The results were negative.

Following these tests, a removable partial denture with cast nickel-chrome framework and acrylic resin denture base was constructed. The patient tolerated this denture well.

One year after her initial examination in the Dental Service, the patient is continuing on maintenance chrysotherapy and her rheumatoid arthritis remains in remission. The mucosa previously covered by the gold denture base remains mildly inflamed and becomes symptomatic on days of monthly injections and immediately following.

DISCUSSION

Stomatitis and dermatitis medicamentosa are the two most common toxic reactions to chrysotherapy, and appear to be hypersensitivity reactions mediated by the immune response (*7-9*). In the patient discussed in this report, oral and dermal reactions both occurred in tissues which were in intimate contact with metallic gold alloys—raising the question of possible sensitization by contact with metallic gold or other metals contained in the alloys. Negative patch and intradermal tests, however, make the diagnosis of classic allergic response unlikely. The pattern of increased mucosal inflammation on days of and following injections indicates a fixed drug eruption.

Many patients report increased pain and stiffness in affected joints shortly following gold injections. These focal reactions usually subside within a few days and cease to occur as the disease comes under control.

These symptoms have been attributed to the rapid accumulation of gold in the inflamed tissues of the affected joints. Theoretically, such a concentration of gold should occur in any inflamed tissue, which might explain the increased oral signs and symptoms seen in our patient on days of and following injections.

Gold is eliminated from the body very slowly, with traces present in the urine more than a year following administration (*20*). For this reason we anticipate that our patient's signs and symptoms will persist well beyond the eventual cessation of chrysotherapy.

REFERENCES

1. Arthritis—The Basic Facts. New York: The Arthritis Foundation, 1976, p 2.
2. Henneberg Z, Rozanić V: New aspects of aurotherapy. Lijec Vjesn 90:885-888, 1968.
3. Myers A: Chrysotherapy in rheumatoid arthritis. Modern Treatment 8:761-768, 1971.
4. Sigler JW, Bluhm GB, Duncan H, et al: Gold salts in the treatment of rheumatoid arthritis. A double-blind study. Ann Intern Med 80:21-26, 1974.
5. Davison S: Treatment of rheumatoid arthritis with gold. Mt Sinai J Med NY 41:807-811, 1974.
6. Lawrence JS: Studies with radioactive gold. Ann Rheum Dis 20:341-352, 1961.
7. Louyot P, Grilliat JP, Monneret-Vautrin D, et al: An immunological study of intolerance to chrysotherapy using Shelley's test, the lymphoblastic transformation test (TTL), and the inhibition of leucocyte migration test (TIML). Rev Rhu Mal Osteoartic 41:1-9, 1974.
8. Davis P, Hughes GRV: A serial study of eosinophilia and raised IgE antibodies during gold therapy. Ann Rheum Dis 34: 203-204, 1975.
9. Denman EJ, Denman AM: The lymphocyte transformation test and gold hypersensitivity. Ann Rheum Dis 27:582-589, 1968.
10. Persellin RH, Hess EV, Ziff M: Effect of a gold salt on the immune response. Arthritis Rheum 10:99-106, 1967.
11. Huskisson EC, Berry H: Some immunological changes in rheumatoid arthritis among patients receiving penicillamine and gold. Postgrad Med J 50(supp 2):59-61, 1974.
12. Persellin RH, Ziff M: The effect of gold salt on lysosomal enzymes of the peritoneal macrophage. Arthritis Rheum 9:57-65, 1966.
13. Bartholomew LE: Isolation and characterization of mycoplasmas (PPLO) from patients with rheumatoid arthritis, systemic lupus erythematosus and Reiter's syndrome. Arthritis Rheum 8:376-388, 1965.
14. Marion BP, Goodburn GM: Effect of an organic gold salt on Eaton's primary atypical pneumonia agent and other observations. Nature 189:247-248, 1961.
15. Adam M, Bartl P, Deyl Z, et al: Uptake of gold by collagen in gold therapy. Ann Rheum Dis 24:378-381, 1965.
16. Relation of toxic reactions in gold therapy to improvement in rheumatoid arthritis. The Research Subcommittee of the Empire Rheumatism Council. Ann Rheum Dis 20:335-340, 1961.
17. Hartfall SJ, Garland HG, Goldie W, et al: Gold treatment of arthritis: review of 900 cases. Lancet 2:784, 838-842, 1937.
18. Lawrence JS: Comparative toxicity of gold preparations in treatment of rheumatoid arthritis. Ann Rheum Dis 35:171-173, 1976.
19. Lawrence JS: Factors in gold dosage and toxicity in rheumatoid arthritis. Ann Rheum Dis 12:129-135, 1953.
20. Freyberg RH: Gold salts in treatment of chronic arthritis: metabolic and clinical studies. Proc Staff Meet Mayo Clin 17:534-541, 1942.

Occupational Health

Eliminating Cadmium Hazards

NAVSEA Notice 9074 of 16 May 1977, "Cadmium plating and materials containing cadmium, elimination of requirements for in selected applications," outlines the hazard of cadmium as used throughout the Navy. The high level of toxicity is cited as reason for eliminating its use. Where substitute materials are approved or available, their use is encouraged.

Specifically, *Naval Ships Technical Manual*, chapter 075, of 1 Nov 1976 prohibits use of cadmium-plated fasteners, including washers used at temperatures above 205° C (400° F) or in contact with fuel, grease, lubricating oil, or oil-based hydraulic fluids. When possible, cadmium-containing products shall not be used in brazing operations. Ventilation requirements of *Naval Ships Technical Manual*, chapter 9920, section 264, should be complied with for all brazing operations, particularly those using cadmium.

Brazing of cadmium shall not be permitted unless the fumes can be exhausted to the atmosphere. Personnel who handle cadmium-coated or cadmium-containing materials should wash their hands before eating or smoking.

A list of cadmium-free silver brazing alloys, prepared by the U.S. Army Environmental Hygiene Agency, is available from the Navy Environmental Health Center (Attn: Cindy Ingalls, Code 4201), 3333 Vine St., Cincinnati, Ohio 45220. A list of cadmium-containing alloys is also available.

Outpatient Medical Records Audit

CDR Leslie C. Ellwood, MC, USN

Audit of outpatient medical records is generally reviewed pessimistically (*1,2*), although the desirability of such action is obvious. Among the problems encountered in attempts to audit the medical records of outpatient practices are:

- lack of accepted criteria of care.
- inadequate recording of care delivered by physicians.
- difficulty retrieving data, because outpatient records are not coded for diagnosis.

Within the military health care system, however, none of these problems is insurmountable. If we adhere to the idea of local programs "developed, implemented, and monitored by the local staff clinicians" (*3*), effective outpatient medical care evaluation programs can be set up.

In the pediatric outpatient clinic of ADM Joel T. Boone Clinic in Norfolk, we instituted a process audit using explicit criteria for the care of otitis media (*2,4*). Through this audit we were able to document the quality of our medical care, provide an educational experience for our pediatric staff, and generate data useful in organizing clinic services.

PROCESS AUDIT

A process audit, as defined in the Performance Evaluation Procedures of the Joint Committee on the Accreditation of Hospitals (*4*), is used to determine whether medical management of a specific illness or problem is appropriate. This is in contrast to the usual inpatient medical audit which is oriented to treatment outcome. The principal purpose of our process audit at Boone Clinic was to develop criteria for care of acute otitis media, with particular attention to physician's notes justifying the diagnosis, medication prescribed, follow-up documentation, and critical medical management of common complications.

After basic instruction in the structure and method of medical record audits, and after a 90-minute discussion among the clinic's pediatricians, we developed our audit for otitis media. Each clinician was given a copy of the audit worksheet (Figure 1) and told that the individual items of care had to be recorded in the patient's health record for an audit element to be considered complete. The pre-audit instruction sheet carried a consensus list of terminology which would satisfy elements 1a and 1b, and appropriate antibiotic dosages for element 3. Thus criteria of acceptable care and terminology were established by staff consensus and the need to record care properly was reinforced. A sample chart entry adequate to satisfy all audit elements is shown in Figure 2.

It was relatively easy for us to retrieve the charts of patients with acute otitis media because of the clinic's appointment system for repeat ear examinations. The names of children returning for reexamination following a clinic visit for acute otitis media, as well as the social security numbers of the children's sponsors, were selected at random. All chart entries pertaining to treatment or followup of these patients' otitis media over a 2½-month period were evaluated for adherence to audit elements as explicitly recorded by clinic physicians. Other statistical data were also recorded.

We ensured anonymity by using a code number for each physician on all audit worksheets and reports. After the clinic staff reviewed and discussed the findings of the completed audit, we told each physician what his or her audit number was.

RESULTS

Two hundred and four outpatient records were audited from 244 records originally selected. Thirty-three (13.5%) of the original charts were assumed

From the Pediatrics Clinic, ADM Joel T. Boone Clinic, Little Creek Amphibious Base, Norfolk, Va. 23520.

FIGURE 1. Outpatient Process Audit for Acute Otitis Media

Elements	Standard	Exceptions
Justification for Diagnosis:		
1. Examination must reveal both:	100%	
a. Evidence of substance other than air behind tympanic membrane		
b. Evidence of inflammation		
Therapy:		
2. Requires antibiotics	100%	
3. Prescribed antibiotic ≥ minimum recommended dosage.	100%	
4. Dosage schedule of antibiotic at least t.i.d.	100%	
5. Medication prescribed for at least 7 days	100%	
6. Antibiotic spectrum **H. influenza** when child < 4 years	100%	Therapy is for persistence of otitis, and initial therapy covers **H. influenza.**
Recurrence noted:		
7. > 2 acute otitis in preceding 3 months noted by physician	100%	
Followup:		
8. Final followup exam for acute otitis media episode reveals normal ear by otoscopy	100%	Final chart entry meets critical management for complication, or ENT referral completed.
Complications:		**Critical management:**
1. Serous otitis media	0%	1. Decongestant, follow-up scheduled.
2. Persistence of infection	0%	2. Antibiotics. (Note indicates probable compliance with initial therapy; followup scheduled).
3. Perforation	0%	3. Followup scheduled.
4. Allergic reaction to antibiotic	0%	4. Noted; antibiotic discontinued.
5. Severe diarrhea	0%	5. Noted for future antibiotic choice.

not to be in the files after they could not be found on three different days. Seven charts had diagnoses other than middle ear disease.

The 204 charts audited contained approximately 500 individual entries.

The need for complete recordkeeping within our outpatient military clinic was readily apparent when we found that in 108 charts (51.8%), two or more physicians had cared for a patient (original diagnosis and followup examinations) in the course of one episode of otitis media. Only 48% of the patients saw the same physician for care of their acute problem as well as followup. The number of charts for which each physician was audited ranged from 16 to 37. Since more than one physician made entries in some 52% of charts, our review of these charts was recorded as a chart audit for *each* physician involved in the patient's care.

We also recorded how often and in what way physicians varied from the established audit, noting when each physician failed to record an element. These variances indicated only errors in medical record entry, not necessarily errors in medical practice.

The most common error was recorded for element

FIGURE 2. Sample of Adequate Chart Entry Using SOAP System*

12 Nov 1976
Wt: 28 lbs

S: 2-year-old male with history of otitis media in early October, normal ears on 27 Oct; now has cold, fever, and right earache.

O: Right ear is red and bulging with yellow fluid. Left ear is normal.
Nose has clear rhinorrhea; throat benign.
Lungs clear.

A: Right otitis media

P: Ampicillin 250 mg t.i.d. x 10 days.
Sudafed 1 tsp t.i.d.
Recheck ear in 2 weeks. Signature M.D.

*The SOAP system of chart entries is taught in many medical schools and residencies. It ensures that the following information is recorded:

S = SUBJECTIVE = History = Illness as described by patient.
O = OBJECTIVE = Physical exam = Signs and physical findings as noted by physician.
A = ASSESSMENT = Impression = Physician's diagnosis.
P = PLAN = Disposition = Treatment plan, including medication, counseling, and followup.

5, in which the physician must indicate duration of therapy. Some 54 chart entries failed to give this information.

The second most common error was failure to record patient compliance with prescribed antibiotic regimen when persistent otitis media was noted in followup exam. This error occurred in 13 of 49 chart entries describing persistent otitis media. Such information would be important for physicians choosing an antibiotic as the second therapy: for example, they would need to know whether the dosage was inadequate or the organism not sensitive. In 11 entries we could not determine the milligram dosage of antibiotic prescribed, and in 5 chart entries the dosage schedule was not recorded.

There were only four errors noted in which the diagnosis of infected eardrum failed to describe both middle ear fluid and inflammation. There were no errors in use of the appropriate antibiotic spectrum for age group. All records indicated that physicians had reviewed other chart entries while caring for children with chronic otitis media.

The total number of errors was 89. If in 204 charts, each requiring completion of 14 elements, there are possible 2,856 errors, then these 89 errors represent an error rate of 3.17%. A medical record audit in which the physicians were not aware of the required elements while recording patient care would probably yield a much higher error rate. However, the purpose of an audit need not be retrospective identification of physician errors. Rather, a charts audit, such as this one, can be an educational tool: physicians first decide upon the best recordkeeping elements, then practice fulfilling these elements while the audit is in progress. A continued series of outpatient audits on varied diagnoses will reinforce good recordkeeping in all areas.

Also, as was true in our experience, additional data obtained during the audit can be valuable in organizing clinic services. As an example, serous otitis media following acute otitis media was noted in 80 charts (39.2%), with 101 entries for serous otitis media recorded, since this problem was diagnosed in some patients on more than one visit. Persistent fluid and inflammation after antibiotic therapy were recorded in 44 charts (21.5%), with 49 episodes of apparently persistent infection. Such data indicated it is desirable that all children with otitis media have their ears reexamined after they complete prescribed medication. Such data could also be used to estimate the number of appointments a clinic will have to reserve for ear reexaminations.

Of the 204 reexaminations initially scheduled after a diagnosis of acute otitis media, there were 101 instances of serous otitis media and 49 instances of persistent inflammatory otitis media requiring further examination. Thus a total of 354 visits were generated from 204 first followup visits scheduled—a ratio of 1 acute otitis visit to 1.7 reexamination visits. The number of appointments lost because patients failed to appear was 24 (12.3%).

In hours, the audit "cost" us 29 physician-auditor hours, 3 hours for pediatric staff meetings, and 3 hours medical records personnel spent retrieving charts.

Patient care evaluation has been mandated by the Federal Government under Professional Standards Review Organization legislation, by health insurance carriers eager to reduce hospitalization costs, and by the Joint Commission on Accreditation of Hospitals. Also, as *U.S. Medicine* noted in its 1 Nov 1976 issue, "complete and proper entries" in military medical records are essential to the defense of medical malpractice suits that might be brought against the Navy.

Military clinics—essentially large group practices with fairly uniform methods, central record files, and centralized administrative functions—have advantages over the type of individual practice where outpatient audits have so far proved unsatisfactory.

Our chief problem—random selection and retrieval of charts of patients with a specific diagnosis—can be overcome if sufficient ingenuity is applied. For example, a clinic could keep lists of patients who request refills of diagnosis-specific medication like antihypertensive drugs, birth control pills, or Ritalin. Or lists could be kept of patients whose laboratory tests are returned to the clinic showing positive urine cultures or pap smears. Lists could also be made of names taken from appointment cards for clinics that treat only specific illnesses. If the scope remains reasonably limited, the time required for the audit would not deter any physician, nurse, or hospital corpsman who desires to improve our health care system.

REFERENCES

1. Osborne C, Thompson H: Criteria for evaluation of ambulatory child health care by chart audit: development and testing of a methodology. Pediatrics 56(suppl 4):625-29, 1975.

2. Mead W: Quality assurance for health supervision of the ambulatory child. J Fam Pract 3(6):587-91, 1976.

3. Custis D: Medical care evaluation programs. US Nav Med 67(6):1, 1976.

4. Jacobs CM, Jacobs NP: Performance evaluation procedures for auditing and improving patient care, in *PEP Primer*. Chicago: Joint Commission on Accreditation of Hospitals, 1975.

Physical Exam Before ACDUTRA

Some confusion persists concerning the physical examination that is required before you report for each period of active duty for training (ACDUTRA). The exam is required regardless of whether ACDUTRA is to be performed at your school or at a naval activity.

Because the naval activities that perform these physical examinations usually cannot respond to last minute requests, you should arrange for your physical exam as soon as you receive ACDUTRA orders. If you have already had a complete physical examination within 12 months of the reporting date on your ACDUTRA orders, you don't have to get another one *provided Standard Form 88 and Standard Form 93 from your last physical exam are still filed in your health record.* But you must still report to a naval or Naval Reserve facility so a Medical Department representative (usually a medical officer) can ascertain that there has been no significant change in your condition and that you continue to be physically qualified for active duty. Your physical fitness will be certified by an entry on Standard Form 600 as well as on your ACDUTRA orders.

Try to obtain a signed copy of SF 88 and SF 93 each time you complete a physical examination, so you can take advantage of the 12-month provision whenever it applies.

GI Bill Education

Armed Forces Health Professions Scholarship students who were on active-duty for 180 consecutive days or more on or prior to 31 Dec 1976 may be eligible for benefits under the Veterans Education and Employment Assistance Act of 1976. Monthly payments are $292 for full-time students with no dependents, $347 with one dependent, $396 with two dependents, plus another $24 for each additional dependent. Interested students should check with the nearest VA office to determine their eligibility.

Students in the Navy Medical and Osteopathic Scholarship Program and the Navy Dental Scholarship Program are not eligible for VA inservice educational benefits if their tuition is paid by the Navy. However, educational benefits may be provided when tuition is not paid by the Navy, such as during vacation makeup courses not covered by the scholarship program.

Scholarship Student Reimbursement Claims

All reimbursement claims are forwarded to the Naval Regional Finance Center, Washington, D.C., for payment. It takes from four to six weeks to process these claims. But it takes even longer when the last copies of the multiple-copy claim forms are not eligible; NRFC employees must then spend extra time at the copy machine—a considerable chore when several hundred claims are involved. You can help them by making sure all copies of the claims form can be read. You'll help yourself, too: the Naval Health Sciences Education and Training Command is now returning claims when the last copies are not legible.

HE KNOWS THE ROPES

When we say someone knows the ropes we infer that he knows his way around at sea and is quite capable of handling most nautical problems. Through the years the phrase's meaning has changed somewhat. Originally, the statement was printed on a seaman's discharge to indicate that he knew the names and primary uses of the main ropes on board ship. In other words, "This man is a novice seaman and knows only the basics of seamanship."

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